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**BEFORE THE PUBLIC UTILITIES COMMISSION
OF THE STATE OF CALIFORNIA**

Order Instituting Rulemaking on the Commission's Own Motion to Consider Renewal of the Electric Program Investment Charge Program.	Rulemaking 19-10-005

**OPENING BRIEF OF THE CALIFORNIA ENERGY COMMISSION
ON THE PHASE 2 ISSUES IDENTIFIED IN THE
COMMISSION'S PHASE 1 DECISION RENEWING EPIC**

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October 2, 2020

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SUMMARY OF RECOMMENDATIONS

- In Phase 1 of this proceeding the Commission found, and the California Energy Commission (CEC) agrees, that EPIC provides positive net economic benefits to ratepayers and the state. However, the CEC also understands the concern with near term impacts for ratepayers during the pandemic. For this reason, the CEC recommends that if the Commission decides to make a reduction in EPIC funding, the Commission implement a temporary 10% EPIC surcharge reduction from the portion of the funding that would have been allocated to the IOUs to balance the economic benefits of the program with affordability.

- The CEC believes that the current administrative structure, including both the CEC and IOUs as Administrators, remains relevant to the program. The CEC encourages the IOUs to quickly resolve the deficiencies identified by the Commission so the Commission can determine whether and how to restart IOU research plans.

- The original rationale applied to developing guiding principles in Decision 12-05-037 remains relevant as does the resulting mandatory guiding principle: providing electricity ratepayer benefits, defined as promoting greater reliability, lower costs, and increased safety. State policy has evolved, and the complementary guiding principles should as well. To this end, the CEC recommends (1) adding decarbonization and equity to the list of complementary guiding principles, and (2) removing the loading order from the complementary guiding principles. The CEC believes that review of guiding principles should occur regularly at program renewal.

- Transparent processes are currently in place and applied for prioritizing policies. Key legislation, Executive Orders and the CEC's Integrated Energy Policy Report inform state energy policy. The Commission provides additional guidance on policy priorities in the scoping memo regarding the Administrators' investment plans. CEC maps each research initiative proposed in the investment plans back to these policy priorities. Policy priorities are further vetted through stakeholder workshops held by the CEC during the development of the investment plan. The Commission has a further opportunity to refine policy direction during the public proceeding associated with the Commission's review and approval of the investment plan.

- There are additional opportunities for stakeholder input, such as during CEC-sponsored EPIC symposiums and forums, technology roadmap development and in solicitation-specific workshops. The CEC believes this is a robust process for identifying and informing policy priorities and believes that the investment cycle is the most appropriate time to bring that input into the Commission's review of policy priorities. The CEC recommends a Commission workshop in Phase 2 to review policy priorities.

- The CEC does not recommend that the Commission be directive on areas, goals and/or strategies in the investment plans, because this could overly restrict the state's ability to address emerging research needs in the state. An overly specified directive on the strategies to meet policy priorities restricts nimbleness when emergent situations arise.

- The CEC recommends that the Commission re-evaluate administrative requirements to identify opportunities to streamline and reduce administrative burden in the program.

- The CEC believes that an increase in the administrative cap is warranted for the CEC in order to more fully realize the research results and return even higher value to ratepayers, including those in underserved communities. The 10% administrative budget is not aligned with comparable research programs and the Commission comparison of the EPIC program to incentive programs is apples to oranges.

- Changes are not needed to the CEC noncompetitive bid reporting process. This reporting process complies with statutory requirements, which require the CEC to notify the legislature in advance of the non-competitive award and provide 60 days for the Legislature to disapprove the request. Additionally, any non-competitive bid is reported to the Commission with the justification for the noncompetitive bid in annual reports. The noncompetitive process has rarely been used by the CEC, accounting for only 0.8% of all CEC EPIC awards.

- The Policy + Innovation Coordination Group (PICG) Coordinator should continue to work with the Administrators to develop a comprehensive retrospective comparison of projects to policy goals.

- The EPIC Evaluation noted that the CEC has extensive stakeholder outreach and provides comprehensive information about its investment planning process. The CEC agrees with this finding. Further, the CEC continually works to improve program implementation and intends to create new opportunities for stakeholder input prior to investment plan development.

- The CEC recognizes that some entities may be limited in their ability to attract match funding, particularly for projects in low income and disadvantaged communities. The CEC has applied approaches that include reducing or eliminating match funding in certain situations to provide more opportunities for these types of projects.

- The CEC believes that existing avenues to share information are sufficient and that more frequent reporting on a quarterly basis is unnecessary, inefficient, and an additional administrative burden. The CEC already deploys multiple approaches for sharing information, including through the annual EPIC symposium, CEC's Energy Innovation Showcase, CEC-developed Empower Innovation platform, CEC website, and topic-specific forums, workshops, and conferences. The CEC notes that the workshops for the PICG's policy and innovation partnership areas will provide additional opportunities to share research results.

- The CEC has developed a comprehensive set of program and project level metrics and reports on the metrics in its EPIC annual report and online in the CEC's Energy Innovation Showcase.

- The CEC supports program and Administrator evaluations. The CEC believes that the best opportunity for the next evaluation should be in three to four years to allow time for newly developed program changes (e.g., PICG) to be implemented. The evaluation should be conducted by an independent entity that is selected through a competitive solicitation.

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I. INTRODUCTION

The California Energy Commission (CEC or Energy Commission) respectfully submits this opening brief in response to the California Public Utilities Commission's (Commission) Phase 1 *Decision Renewing the Electric Program Investment Charge* (Phase 1 Decision) in Rulemaking 19-10-005. This brief is submitted in accordance with Rule 13.11 of the Commission Rules of Practice and Procedure (Rules) and addresses the Phase 2 issues identified in the Phase 1 Decision.

The CEC supports the Commission's efforts to look for ways to continually enhance and streamline the EPIC program to provide the greatest ratepayer benefit at the lowest cost. This includes the benefits EPIC can provide for achieving the state's clean energy policies faster and creating job growth. On September 23, 2020, when signing Executive Order N-79-20,[1] setting aggressive goals for electric vehicles in the state, the Governor announced that he will aggressively move the state further away from the reliance on fossil fuels while retaining and creating new jobs and spurring economic growth.[2] EPIC is well positioned to support the Governor's direction, and enhancements should be made to further this goal.

The CEC believes the program has been successful in part because the mandatory and complementary guiding principles and administrative structure established by the Commission in Decision (D.) 12-05-037 set the program course for success. The CEC believes that Phase 2 of this

[1] Governor's Executive Order No. N-79-20 (September 23, 2020).
[2] Refer to press release at https://www.gov.ca.gov/2020/09/23/governor-newsom-announces-california-will-phase-out-gasoline-powered-cars-drastically-reduce-demand-for-fossil-fuel-in-californias-fight-against-climate-change/, accessed on September 24, 2020.

proceeding is the appropriate time to re-evaluate these key programmatic elements. Overall, the current *mandatory* guiding principle and administrative structure remain appropriate for the program. However, the CEC believes that refinements should be made to the *complementary* guiding principles to better reflect current state policy. While the CEC does not believe any changes are needed to the administrative structure, it would be beneficial to identify ways to streamline administrative activities. For example, some areas of information sharing originally anticipated through the annual report can now be more effectively achieved through electronic platforms, such as the CEC-developed Energy Innovation Showcase to provide program information more broadly and more easily accessible, while reducing duplication of effort.

The current Commission and CEC process for setting and implementing policy priorities is robust. The program relies heavily on key legislative and Executive Order policies, supported by the CEC's Integrated Energy Policy Report (IEPR) to steer the investment planning process to ensure each investment plan addresses current policy priorities. The CEC Commissioners review the investment plan and provide feedback, guided by the State's energy policy, as articulated by the Commission and CEC. Additionally, the Commission provides guidance in the scoping memo for investment plan development and vets priorities through stakeholder engagement during the investment plan review and approval process. Additionally, the CEC does not believe that the Commission should be prescriptive for areas, goals, and/or strategies within the investment plan to ensure the state has flexibility to address refinements in state policy or emerging needs.

The CEC believes that ongoing evaluation of the program is important to review successes and if warranted, make improvements. The CEC has developed a robust set of program and project metrics and reports performance in its EPIC annual report and the Energy Innovation Showcase, building on the foundation provided by the Commission. The application of these metrics demonstrated the value of the EPIC program and was provided in the CEC's Phase 1 Opening Brief. Examples of these success metrics include:

- Companies that have received EPIC funding or support have collectively received over **$1.8 billion in follow-on private investment**.
- More than **34 technologies and related services companies** have been successfully commercialized and dozens more are moving towards commercialization.
- **34 EPIC projects** have improved the effectiveness of energy-related codes and standards, a key tool to enabling widespread diffusion of new technologies and data-

driven practices. Five of these projects could lead to over **$1 billion in annual energy cost savings** if adopted in regulatory codes.

- EPIC Annual Symposium in-person attendance grew from roughly 100 in the first year (2015) to **approximately 800 in 2019**. More recently, the CEC hosted a virtual forum in September 2020 on technology advancements to enable buildings to support the decarbonization goals of SB 100. This virtual forum was attended by over 800 people. The number of attendees at these events matters because they are platforms (1) for information sharing and (2) that help build the networks needed to accelerate technologies and ideas. They also represent a substantial investment of CEC resources to make this successful.
- EPIC projects have **advanced 17 tools** that make complex information and data more accessible, scalable and lower cost to operationalize. These tools are estimated to have **over 700,000 users**.
- CEC staff have participated in nearly **100 outreach and community events** to promote knowledge about EPIC funding opportunities to increase the opportunities for all communities, particularly low income and disadvantaged communities to be part of the clean energy transition.
- This outreach has helped result in over **65 percent** of the CEC's Technology Demonstration and Deployment (TD&D) funds going to projects located in and benefitting low-income or disadvantaged communities as defined by CalEnviroScreen.[3]

The CEC also supports independent program evaluations and recommends that the next program evaluation be conducted in three or four years to provide time for newly implemented changes, such as the Policy + Innovation Coordination Group (PICG), to have sufficient operational time to evaluate their benefits.

The CEC appreciates the opportunity to provide input on efforts to continually strengthen and enhance the EPIC program. The CEC looks forward to continuing its work with the Commission to implement the renewed EPIC program, build on the program's success in shaping California's clean energy economy, and enable the state to more effectively and efficiently meet its energy mandates.

[3] Opening Brief of the California Energy Commission to the Phase 1 Issues Identified in the Assigned Commissioner's Scoping Memo and Ruling, April 17, 2020 (CEC Phase 1 Opening Brief).

II. DISCUSSION

A. Phase 2 Issues

The Scoping Memo states that the proceeding will be conducted in two phases, each of which will address a separate set of program-related issues.[4] The Phase 1 Decision identifies the issues to be reviewed in Phase 2 of the proceeding. Phase 2 of the proceeding will evaluate program funding, the role for the IOUs, whether changes to the guiding principles and policy priorities for the EPIC program are needed, whether administrative and program structure improvement are needed, how the Commission will address recommendations from the EPIC Evaluation that have not been fully addressed, and how to address future program and Administrator evaluations.[5]

This brief addresses the issues identified for Phase 2 of the proceeding in the same order listed in the Phase 1 Decision. The CEC provides a summary response statement for each of the Commission's Phase 2 issues, followed by a more detailed response. For convenience, each of the Phase 2 issues is repeated in brackets ([ ]) immediately prior to the CEC response.

> [*Phase 1 Decision Question 1: In light of the current economic recession, is a 20 percent reduction in the current EPIC surcharge appropriate? Would a ten percent reduction in the total budget be more appropriate? Are any other budgetary changes necessary?*]

1. The CEC Believes that Current Conditions Warrant a Temporary 10% Reduction, Which Should Be Reinstated After the Pandemic.

As noted in the CEC's Opening Comments on the Phase 1 Proposed Decision, the CEC believes that during these times of economic recession, it is important to continue to make investments that accelerate the development of clean energy industries that can contribute to California's economic recovery.[6] However, the CEC understands the Commission's desire to be mindful of customer affordability at this time and the need to balance this concern with the ratepayer benefits and broader economic benefits of continuing investments that will outlast the recession.[7] As such, the CEC supports a temporary 10% reduction in the EPIC program funding

[4] Assigned Commissioner's Scoping Memo and Ruling, March 6, 2020 (Scoping Memo), p.2.
[5] D.20-08-042, pp. 25-27.
[6] Opening Comments of the California Energy Commission on the Proposed Decision Renewing the Electric Program Investment Charge, August 11, 2020 (CEC Opening Comments on PD), p. 1.
[7] D.20-08-042, pp. 21-22.

during the pandemic. The 10% should come from the funding that was previously allocated to the IOUs. However, the CEC supports the recommendations of Southern California (SCE)[8] and the Natural Resources Defense Council (NRDC)[9] in their opening briefs to the Phase 1 Proposed Decision to make this reduction temporary. The temporary reduction should be as short as possible (i.e., no more than one year) to ensure that EPIC funds can be fully available as soon as possible to support the state's economy, clean energy goals, and the growing clean energy marketplace.

The Commission should consider that a reduction in funding now may have an impact on or delay the long-term benefits of the program. At the same time that we are juggling budget shortfalls, we also need to be doubling down on accelerating climate and clean energy solutions. As noted in the introduction, the Governor has signaled his interest in achieving the state's zero-carbon electricity goal much earlier than 2045, because the recent wildfires and excessive heat are strong evidence of the impact of climate change on the state. Commissioner Guzman Aceves noted in her introduction of the Phase 1 proposed decision during the Commission's August 27, 2020 business meeting, "We know that we will need innovation to continue to drive us toward affordable and safe ways to withstand the inevitable impacts of hotter days and more frequent droughts. In California, we need to invest in science innovation and green jobs, and now more than ever remain committed to clean energy." President Batjer and Commissioner Rechtschaffen also stated that we need this now more than ever.[10]

A recent study conducted by Industrial Economics, Inc. (IEc) for the CEC modeled the economic impacts from CEC's EPIC research from 2014 - 2024. For the $755 million in EPIC investment, associated $441 million in matching funds, and follow-on investments of $2.65 billion during this time period, it is estimated that EPIC will result in $4.2 billion in economic value, including direct, indirect and induced effects of the investments.[11] For these reasons, the Commission should balance the short-term interest in a reduction to the EPIC program funding with the long term economic and financial gain of maintaining current funding levels.

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[8] Comments of Southern California Edison Company (U 388-E) on ALJ Glegola's July 22, 2020 Proposed Decision Renewing the Electric Program Investment Charge Program, August 11, 2020 (SCE Comments on PD), p. 1.
[9] Comments of Natural Resources Defense Council on the Proposed Decision Renewing the Electric Program Investment Charge, August 11, 2020 (NRDC Comments on PD), p. 1.
[10] http://www.adminmonitor.com/ca/cpuc/voting_meeting/20200827/, accessed September 27, 2020.
[11] These are preliminary results. A final report is anticipated by the second quarter of 2021.

[*Phase 1 Decision Question 2: Other than the direct administrative role that PG&E, SCE, and SDG&E had in prior EPIC investment cycles, is there another manner in which the utilities can participate in EPIC research projects? For example, should a certain portion of the CEC's budget be allocated for the utilities, and/or should utility investment proposals be represented in CEC investment plans? How could the Commission ensure that the expertise and applied knowledge of the IOUs informs EPIC research without continuing the IOUs' direct administrative role as previously structured? If the existing structure, with the electric utilities continuing with direct administrative roles is deemed the preferred option, despite its documented flaws, how does the Commission ensure that the utilities comply with their obligations as administrators?*]

2. The CEC Supports Retaining the IOUs as Administrators with Additional Program Management Oversight.

The CEC believes that the current administrative structure, including both the CEC and IOUs as Administrators, remains relevant to the program.[12] The Commission laid out very specific differences in roles for the CEC and IOUs as Administrators in D.12-05-037, based on the value that each can provide to EPIC research for the state.

- IOU Role: The Commission noted in D.12-05-037 that demonstrations of technologies that are designed to improve utility systems would be best performed by IOUs, since they own the assets on which the technology would be deployed and may ultimately be the consumers of these technologies.[13] Recently, the IOUs have proposed EPIC projects to demonstrate emerging technologies on their infrastructure that can reduce the risk of the grid causing a wildfire or provide real time data that can inform wildfire management. While these are EPIC 3 projects, this is an area of critical need for the state, and additional demonstrations will be necessary in EPIC 4 and beyond to improve the reliability and resilience of the grid.
- CEC Role: The CEC has a role in all research areas:
    - Applied Research and Development - the Commission noted that development of pre-commercial technologies is better aligned with the CEC, which has public interest objectives and no financial interest in the commercial development of a technology.[14]

[12] D.12-05-037, p. 27.
[13] D.12-05-037, p. 27.
[14] D.12-05-037, p. 27.

- Technology Demonstration and Deployment – the CEC is better suited for demonstrations of a broader set of technologies that can benefit ratepayers, particularly in reducing energy use. The CEC has no business interest in any company, technology or solution.
- Market Facilitation - In Decision 13-11-025 the Commission determined that only the CEC can fund market facilitation activities.[15] The CEC agrees with this decision since a public interest agency with no business interest in a technology is best suited to support the broader deployment of technologies, such as through the CEC's innovation clusters.

The CEC believes that the current administrative structure is well conceived. However, the CEC recognizes that the performance of the IOUs in their Administrator role has not been fully responsive to EPIC Program requirements. The EPIC Evaluation noted that the IOU Administrators could better fulfill the spirit of some EPIC program requirements, including in transparency in the award process, earlier and broader engagement of stakeholders, and evaluation of benefits. In response, the Commission required the IOUs to develop process improvements and provide them for approval in a joint Research Administration Plan (RAP).[16] The Commission approved the RAP in Application (A.) 19-04-026, but the Commission noted that the IOU Administrators continue to fall short, particularly in providing responses that were limited and ministerial.[17] The CEC recommends allowing a year for the IOUs to implement the changes identified in the RAP, along with any other revisions resulting from the Phase 2 decision, and then reviewing the IOUs' performance thereafter.

The CEC does not recommend a structure where the IOUs would be the equivalent of sub-administrators under CEC administration for the following reasons. First, the CEC should not take on the additional administrative responsibilities of managing IOU-led research because, unlike the Commission, the CEC would not have the regulatory oversight of the IOU's research implementation. Second, the option of allocating a portion of the CEC's EPIC funding to IOUs would substantially reduce the research most appropriately led by the CEC, particularly in demonstrations, since IOU EPIC research is not permitted in the areas of applied research and

[15] D.13-11-025, pp. 41-42.
[16] D.18-10-052, Ordering Paragraph (OP) 6.
[17] D.20-02-003, pp. 15, 17, 33.

development or market facilitation. Third, redirecting research to IOU-related scope would substantially impact the ability of the CEC to address research needs that are not as well suited for IOU leadership such as building decarbonization, transportation decarbonization, and increased renewable generation on the customer side of the meter. These research areas will need increased focus to address the Governor's push to accelerate the state's efforts to tackle climate change and achieve zero carbon electricity prior to the current 2045 mandate. For all these reasons, the CEC believes that the oversight of the IOUs should remain independent of the CEC in the administration of EPIC research.

If the Commission expands the EPIC program budget to include additional funds for research in areas traditionally covered by the IOUs, and allocates the administration of these additional funds to the CEC, the CEC would want to ensure the additional funds are awarded through a competitive process consistent with the CEC's other EPIC program funds. This would require the CEC to develop solicitations on the areas of research most appropriate for the areas traditionally covered by the IOUs and award grants on a competitive basis.

The roles the IOUs have played in research under CEC administration include their role as consultants on certain CEC solicitations, when it is predetermined that the IOUs will not be bidders in the competitive process. The other role is as an applicant to the CEC's EPIC solicitations. The IOUs have occasionally bid, as a prime or subcontractor, and been successful in the CEC's competitive process. To maintain the competitive integrity of CEC-funded research in a scenario where CEC administers all program funding, the IOUs would need to retain these roles.

3. Guiding Principles and Policy Priorities.

The Commission established a mandatory guiding principle for EPIC in D.12-05-037, supported by six complementary principles.[18] Policy priorities have been the state's clean energy legislative mandates and Executive Orders, with priorities emphasized by the Commission in investment plan development. The CEC believes that these clear guiding principles and policy priorities have been a hallmark of the program's success. Establishing and aligning research to guiding principles and policy priorities has resulted in a very clear connection between CEC research and the state's clean energy mandates and needs. The CEC uses the guiding principles and policy priorities in all phases of program implementation: to shape research initiatives in the

[18] D.12-05-037, OP 2.

CEC investment plans, to describe the purpose and driver of each solicitation, and to shape research project goals. The CEC communicates this alignment in each solicitation and for each project in the CEC's EPIC annual report and project final reports. This has resulted in a very clear alignment of research to the guiding principles and policy priorities and is robustly communicated in all aspects of the CEC's EPIC program.

The Commission is requesting input on when and how to address changes to key program drivers. Table 1 below provides a high-level overview of the CEC's recommendations on key program drivers. The sections that follow address each of the specific questions raised by the Commission in the Phase 1 decision.

Table 1: CEC Recommendations for Setting Guiding Principles, Policy Priorities and other Key Program Elements

Topic	When Addressed	CEC Recommended Change
Guiding Principle	• During program renewal	• None
Complementary Principles	• During program renewal	• Add energy efficiency and decarbonization • Remove loading order
Policy Priorities	• Set by the Commission in investment plan scoping order/memo and during review of investment plans • Administrators implement during investment plan execution	• None
Areas, Goals, and/or Strategies	• Established by Administrators when scoping solicitations to align with the policy priority direction from the Commission	• None
EPIC Evaluations	• As needed to confirm alignment of research to policy priorities	• Conduct the next EPIC evaluation in three to four years to allow time to incorporate changes from Phase 2

[*Phase 1 Decision Question 3: How should the Commission determine more specific guiding principles and policy priorities for EPIC?*]

a. The original rationale for establishing guiding principles and policy priorities remains relevant.

Guiding Principles

The CEC believes that the rationale supporting the guiding principles for the program, established in D.12-05-037, remains applicable and sufficiently specific, and should continue to be used by the Commission to determine guiding principles. As noted in the EPIC Staff Proposal[19] and adopted in the Decision, the guiding principles were based on multiple drivers, including those that are foundational to the Commission's legal authority to establish the program (e.g., providing ratepayer and societal benefits), supporting the state's ability to meet relevant and current legislation and Executive Orders (e.g., Assembly Bill 32,[20] Executive Order S-3-05 [21] for greenhouse gas reduction, Executive Order N-79-20 for in-state sales of zero-emission vehicles, and Senate Bill 626 [22] for low-emission vehicle/transportation), providing for economic development, and efficiently using ratepayer funds. The Decision established a single mandatory guiding principle and six complementary guiding principles:

Mandatory Guiding Principle

The mandatory guiding principle established in D.12-05-037 is providing electricity ratepayer benefits, defined as promoting greater reliability, lower costs, and increased safety.[23] The CEC does not believe any change is needed to this mandatory guiding principle, because it remains the most relevant for guiding the EPIC program and, as noted in D.12-05-037, is consistent with the Commission's legal authority to establish the EPIC program.

Complementary Guiding Principles

The Commission also established six complementary guiding principles in D.12-05-037:

- Societal benefits,
- GHG emissions mitigation and adaptation in the electricity sector at the lowest possible cost,
- The loading order,
- Low-emission vehicles/transportation,
- Economic development, and

[19] California Public Utilities Commission Proceeding R.11-10-003, Electric Program Investment Charge Staff Proposal, February 10, 2012.
[20] AB 32 (Stats. 2006, ch. 488).
[21] Governor's Executive Order No. S-3-05 (June 1, 2005).
[22] SB 626 (Stats. 2009, ch. 355).
[23] D.12-05-037, p. 19.

- Efficient use of ratepayer monies.[24]

While these have been useful for guiding the program to date, the CEC recommends updates to these complementary guiding principles, including the addition of decarbonization and equity and the removal of the loading order, as further addressed in section 3.b below. The CEC also believes that program renewal is the best time to re-evaluate the guiding principles, as further addressed in section 3.d below.

Policy Priorities

EPIC policy priorities are based on current legislative and Executive Order mandates and re-evaluated in the investment planning process. The CEC believes that the current process of establishing policy priorities as part of the investment planning process with stakeholder input is the most appropriate approach for EPIC and is discussed further in sections 3.c and 3.d below.

[*Phase 1 Decision Question 3.a: Do the "complementary guiding principles" established in Decision (D.) 12-05-037 need refinement and/or updating?*]

b. The "Complementary Guiding Principles" Established in D.12-05-037 Should Be Updated to Include Decarbonization and Equity and to Remove the Loading Order.

The CEC believes that the complementary guiding principles established in D.12-05-037 have been valuable for the program. The CEC has used them to guide investment planning and execution and in assessing portfolio and project benefits. However, some updates are warranted as a result of evolving state priorities. Legislative and Executive Order mandates have emphasized some principles over others. For example, Senate Bill (SB) 100[25] establishes a bold GHG reduction mandate of 100% zero carbon electricity by 2045. SB 100 is driving decarbonization in the state, primarily through the electrification of major uses of fossil fuel, including in buildings, industrial processes, and transportation. Executive Order B-48-18[26] further emphasizes decarbonization by setting a mandate of five million zero-emission vehicles in the state by 2030. Multiple strategies are valuable for achieving decarbonization and may vary depending on the situation. In the past, the loading order was applied, which emphasized energy efficiency and demand response first, followed by renewables, and then clean-fossil generation. However, there

[24] D.12-05-037, OP 2.
[25] SB 100 (Stats. 2018, ch. 312).
[26] Governor's Executive Order No. B-48-18 (January 26, 2018).

are times when the state may achieve greater GHG reduction by decarbonization and the use of renewables over focusing first on efficiency. This does not imply moving away from a focus on reducing building energy use. Rather, it is an acknowledgment that some deep decarbonization efforts may actually increase building energy use, such as transportation electrification.

Additionally, Assembly Bill (AB) 523,[27] AB 865,[28] and the SB 350[29] Barriers Study have emphasized equity and diversity in clean energy development. Equity is not captured directly by the current complementary guiding principles but is a clear focus for the state and the EPIC program.

Legislation and Executive Orders implemented since D.12-05-037 emphasize decarbonization and equity as guiding principles in the state. However, less emphasis has been placed on the loading order. Efficiency remains a crucial strategy in achieving GHG reduction goals and is a critical strategy that supports decarbonization and cost savings, which is particularly important in low income and disadvantaged communities. The CEC recommends that the complementary guiding principles include energy efficiency, decarbonization, and equity and that the loading order be removed.

[*Phase 1 Decision Question 3.b: How should the Commission establish additional policy priorities for the program? Should the Commission provide direction for areas, goals, and/or strategies that the Commission wants to ensure are highlighted or prioritized by EPIC, within the context of the mandatory guiding principles and other program rules?*]

c. Policy priorities for the program should be established during the investment plan development process, but the Commission should not be prescriptive for areas, goals, and/or strategies to enable the Administrators to retain flexibility to address emerging research needs in the state.

The EPIC program has a robust approach to ensuring the policy priorities are addressed by research. These policy priorities are identified by the Commission in the investment plan development process and addressed by the Administrators during the investment plan execution. As a sister agency responsible for energy policy development and implementation, the CEC has a responsibility to align research with state policies and priorities.

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27 AB 523 (Stats. 2017, ch. 551).
28 AB 865 (Stats. 2015, ch. 583).
29 SB 350 (Stats. 2015, ch. 547).

Investment Plan Development Process and Policy Priorities

The investment plan process has multiple steps where policy priorities established by the Commission are reflected in the CEC's research with substantial input from stakeholders. The CEC's investment plan process, which takes approximately a year to complete once the scoping memo is issued, provides multiple opportunities for stakeholder input to shape the research initiatives to policy priorities. The Commission's review and approval of the investment plan, which takes approximately six months, provides additional opportunity for stakeholder input. The discrete steps are provided in the response in section 5.b.iii below and summarized here.

- **Investment Plan Scoping Memo**: The scoping memo is the most appropriate opportunity for the Commission to set policy priorities. The Commission has provided guidance on policy priorities in past scoping memos for new investment plans. For example, the Commission provided guidance in the scoping memo for the Third Triennial Investment Plan by identifying the need for the Administrators to determine strategies and opportunities for directing EPIC projects to disadvantaged communities and the best means for conducting outreach to these communities.[30] The Investment Plan process is the right time for policy updates as it allows stakeholder input as part of the Commission proceedings as well as the Administrators' Investment Plan workshops. In response, the CEC not only created projects located in disadvantaged communities but also included more specific opportunities for research that could benefit disadvantaged communities more broadly, including deploying next generation window and building envelope systems, multifamily factory-built homes, and demonstrating energy storage and microgrid technologies in disadvantaged, low income and California Tribal communities. The CEC also revised solicitation scoring criteria, so applicants are required to include specific benefits their technologies provide to disadvantaged and low-income communities. The CEC believes the scoping memo is the best time for the Commission to provide additional guidance on policy priorities, since it ensures that these priorities are considered from the beginning, and Administrators can shape investment plans to best address the priorities.

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[30] Scoping Memo and Ruling of Assigned Commissioner, August 18, 2017, p. 5.

- **Stakeholder Input During the Drafting of the CEC Investment Plan**: The CEC process has four opportunities for stakeholder input on research to meet policy priorities.
  - The CEC holds at least one public workshop at the beginning of the investment planning process to solicit input on research to support policy priorities. For the Third Triennial Investment Plan, the CEC first developed draft research themes for the investment plan then hosted one public workshop in collaboration with the IOU Administrators and with the involvement of the Commission to solicit input on the broad research themes. The input received was used to refine the themes.
  - The CEC requests more specific written recommendations on research areas or initiatives within the themes from stakeholders to help focus the themes on the most pressing research needs. The CEC staff drafted the investment plan to describe critical research areas and initiatives within the themes, further focusing EPIC 3 research. However, the CEC shaped the research themes and initiatives so that they were not restrictively narrow, which allowed the CEC the flexibility to further refine research priorities as state priorities and markets evolve.
  - The CEC releases the draft investment plan for further stakeholder input. For the EPIC 3 investment plan, the CEC hosted three workshops with the IOU Administrators to review the draft investment plan and solicit feedback. CEC staff also hosted five topic-specific workshops to delve further into the research needs in three areas. This included one workshop focused on distributed energy resource technologies, two on climate change, and two on incorporating equity communities in research. CEC staff then considered the stakeholder input and comments and prepared a final draft investment plan for CEC Commissioner consideration at a CEC business meeting.
  - The CEC encourages interested parties and members of the public to provide comments prior to and when the CEC considers approval of the draft investment plan at a publicly noticed business meeting.
- **Commission Review and Approval**: The Commission vets the final draft investment plan with stakeholders through its EPIC proceeding and takes public comment on the

plan. Therefore, through its EPIC proceeding, the Commission has the opportunity to provide further guidance on policy priorities.

The above process ensures that there are significant opportunities for robust stakeholder engagement and public review to help shape the policy priorities reflected in the CEC investment plans.

Investment Plan Execution

During the execution of the investment plan, the CEC draws upon multiple sources to shape specific solicitations and refine research initiatives to be the most effective to address policy priorities. The policy priorities are not amended, but the strategies to achieve them are refined or expanded, as necessary to address changes in focus that the state may have on priorities or changes in the market. The CEC utilizes the information gained from efforts such as multi-agency roadmaps, to shape solicitations that address the specific research gaps identified in the roadmaps. The CEC also holds topic-specific public workshops to solicit information to shape the scope of research objectives. For example, when CEC was developing an approach for demonstrating an Advanced Energy Community (i.e., a community scale deployment of multiple distributed energy resources), the CEC first developed a white paper proposal, released it for review and held a workshop to receive feedback on the approach. The CEC used the stakeholder input to help shape the resulting solicitation. These additional opportunities for stakeholder input help further shape and refine EPIC research to be most aligned with state priorities.

The CEC believes that the combination of opportunities for the Commission and stakeholders to shape research that addresses state policy priorities is sufficiently structured and comprehensive to be confident that the program is focused on the highest policy priorities.

Areas, Goals, and/or Strategies

The CEC does not believe that the Commission should be further prescriptive on areas, goals and/or strategies, since this will reduce the flexibility to address state needs as they arise. The CEC has demonstrated the ability to use this flexibility, while ensuring that the funded research appropriately addresses state policy priorities. Based on a review of the CEC's portfolio, the EPIC Evaluation concluded, "a very high percentage of projects meet the broad policy goals of distributed energy resources, supporting the loading order, energy efficiency and generating clean energy jobs. A smaller proportion of funding is allocated to projects that will support meeting more narrowly-focused policy goals of energy storage, electric vehicles and the smart grid."

An effective administrator needs flexibility within an investment cycle for two key reasons. First, technology breakthroughs may occur between the time the CEC investment plan is approved and when it develops corresponding solicitations under a research initiative. The breakthrough may negate the need for research or may change the focus (e.g., technology developers may make a breakthrough on their own and may no longer need applied research to move the technology from the lab, but they may need a demonstration of their technology in a real-world environment to demonstrate commercial viability). If the research initiative had been written very specifically to focus on applied research, the CEC would not have flexibility to shift research direction to a real-world demonstration. Second, conditions may evolve in the state that warrant a shift in focus. Two examples where an overly specific investment plan would have limited the CEC's ability to address state priorities include:

- The CEC included an initiative in EPIC 3 that focused on solutions that address climate change impacts to the electric system. At the time, public safety power shutoffs (PSPS) were rarely used. After the development and approval of the EPIC 3 investment plan, PSPSs became a much higher priority for the state after several major wildfires were caused by the electric system. The CEC was able to shape solicitations to focus on developing technologies that would support communities in high fire threat areas, such as demonstrations of long duration energy storage to support resilience. If the CEC or Commission had narrowly focused the climate change initiative, the CEC would not have had the flexibility to address this urgent priority without first seeking the Commission's approval to change the investment plan through a time-intensive process.
- CEC's EPIC 2 investment plan included an initiative to lower the cost and improve the efficiency of biomass-to-energy systems by demonstrating technologies that convert low moisture organic wastes, such as woody biomass from forest, agriculture and urban sources, to electricity. Within a year of the approval of the EPIC 2 investment plan, the Governor issued the Proclamation of a State of Emergency to protect communities against unprecedented tree die-off from severe drought. The CEC was able to shape and accelerate the release of a solicitation to develop and deploy woody biomass-to-energy systems in regions considered as high hazard zones and require that the feedstock be sourced from those regions, to help lower the risk of catastrophic wildfires. If the bioenergy initiative in the EPIC 2 investment plan was narrowly focused, the CEC

would not have had the flexibility to address the urgent priority without a change to the investment plan.

In summary, the CEC believes that the current approach of establishing policy priorities in the investment plan process, based on legislative and Executive direction and input from industry stakeholders, sufficiently aligns research to policy priorities. In addition, EPIC can better address evolving state needs by retaining flexibility, and the Commission should not be more prescriptive on areas, goals, and/or strategies. These approaches have served the EPIC program well by ensuring the research is aligned with, yet flexible to address, state priorities. The CEC recommends that the Commission continue to use these approaches.

[*Phase 1 Decision Question 3.c: What should be the process/cadence for revisiting these principles and priorities?*]

d. Principles should be revisited at program renewal and priorities set during investment plan development.

Regarding guiding principles, the CEC believes that guiding principles retain relevance over time and would only need to be re-evaluated during the program renewal process. The guiding principles established in D.12-05-037 have provided valuable direction for the first three EPIC investment plans. With the changes recommended above, the CEC does not believe that changes will be necessary until the next renewal cycle.

Regarding policy priorities, the CEC believes that the investment plan development process already provides the appropriate cadence and opportunity for the Commission to revisit policy priorities. The scoping memo for the investment plan process provides a critically timed opportunity to clarify EPIC priorities for the investment plan cycle and subsequent stakeholder input, and CEC Commissioner review during investment plan development provides a second opportunity to shape research priorities.

4. <u>Administrative and Program Structure Improvements.</u>

[*Phase 1 Decision Question 4.a: What other changes to the administrative structure of EPIC could benefit the program? Is the current administrative structure sufficient to balance responsiveness to emerging RD&D priorities with the need for oversight and transparency?*]

a. **No additional changes are needed to the current administrative structure, but the Commission should review the administrative requirements.**

Administrative Structure

The CEC believes that the current administrative structure is valuable to the program by including both the CEC and IOUs as Administrators. The justification of the structure provided in D.12-05-037 remains relevant to the program.[31] The development of pre-commercial technologies (e.g., applied research and development) is better aligned with a state agency, which has public interest objectives and no financial interest in the commercial development of a technology.

Demonstrations of technologies that are designed to improve utility owned systems would be best performed by IOUs, since they own the assets on which the technology would be deployed and may ultimately be the consumers of these technologies. A state agency is better suited to demonstrate a broader set of technologies, where there is no business interest in any particular company, technology or solutions. In D.13-11-025, the Commission determined that only the CEC can fund market facilitation activities.[32] The CEC agrees with this decision since a public interest agency with no business interest in a technology is best suited to support the broader development and deployment of technologies, such as through the CEC's innovation clusters. The innovation clusters provide entrepreneurial support services, such as access to laboratory and testing facilities, technical experts, business plan development, and connections to investors, corporate partners, and pilot customers. As such, the CEC believes that the current structure is working and does not see a compelling reason to change the current administrative structure.

Administrative Requirements

While not specifically addressed in the Commission's question, an important topic to be reviewed in renewal is the program's administrative requirements. Some requirements have grown incrementally in the level of effort, and when considered cumulatively may not provide the greatest benefit to the program for the effort required. Changes were made with the intent of ensuring that the program was sharing information broadly; however, the current process has caused confusion and is not the most efficient way to share information. The following decisions illustrate the incremental changes to filing the annual report:

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[31] D.12-05-037, p. 27.
[32] D.13-11-025, pp. 41-42.

- D.12-05-037, Ordering Paragraph 16 requires Administrators to file an EPIC annual report each year on February 28, 2013 – 2020 with the Director of the Commission's Energy Division.
- D.12-05-037, Ordering Paragraph 16 requires service of the EPIC annual report on all parties in the most recent EPIC proceeding; all parties to the most recent general rate case of each IOU; and each successful and unsuccessful applicant for an EPIC funding award during the previous calendar year.
- D.13-11-025, Ordering Paragraph 14 requires annual reports to include a final report for every project completed during the previous year.
- D.13-11-025, Ordering Paragraph 22 requires EPIC annual reports to follow the report outline appearing in Attachment 5 to the Decision. The report outline includes 15 reporting elements for project descriptions under item 4.c. of the outline.
- D.13-11-025, Ordering Paragraph 23 requires annual reports to include an electronic spreadsheet that follows the template included as Attachment 6 to the Decision to report on projects.
- D.13-11-025, Ordering Paragraph 24 allows the IOUs, but not the CEC, to obtain waivers from applicants to opt out of being served the EPIC annual report.

The CEC EPIC Annual Report is a comprehensive and detailed document. To provide a comprehensive summary of program highlights and to meet the Commission reporting requirements, the 2018 CEC EPIC Annual Report was 1,167 pages and the 2019 report was 1,173 pages. The majority of the report is summaries of all past and current projects in compliance with the requirements from D.13-11-025, Attachments 5 and 6 (what currently appears as Appendices B and C in the CEC annual report). The CEC EPIC Annual Report is expected to increase in size each year as more projects are funded. The CEC has included links to posted final project reports to comply with D.13-11-025, Ordering Paragraph 14. Final reports are produced by EPIC recipients by the end of the grant agreement term, and then go through a review, approval, and accessibility formatting process prior to posting on the CEC website. For projects completed in the last quarter of the calendar year, however, final reports are not always finalized and posted before the annual reporting deadline.

In order to be responsive to Commission reporting requirements the CEC has been filing project reports in each Commission EPIC Investment Period proceeding which the report covers.

Since CEC EPIC projects often span multiple years, it still reports on projects from the first EPIC Investment Cycle, 2012-2014. Therefore, in recent years the CEC has filed report documents in all three EPIC Investment Cycle proceedings (A.12-11-001 and related matters; A.14-04-034 and related matters; and A.17-04-028 and related matters). This requires preparation of three sets of reporting documents since each set requires proceeding-specific cover pages and headings.

Service of the CEC annual report is also an extensive process. The annual report is served on the service lists for all three investment plan proceedings, in addition to the service lists to the most recent general rate case of each IOU, and each successful and unsuccessful applicant for a CEC EPIC funding award during the previous calendar year. Each set of served documents consists of: Notice of Availability, project status spreadsheet, and Certificate of Service. In recent years this has amounted to over 500 sets of report documents served from twelve service lists, which are pulled the day of filing, and recipients sometimes receive multiple emails due to email attachment size restrictions. Oftentimes CEC EPIC applicants who receive the CEC report packages do not want it or do not understand why they are receiving such a large report package accompanied by official Commission service language. The CEC has received calls and emails from worried applicants who thought a legal proceeding was being initiated against them after receiving the service emails. Hard copies of the complete annual report package (over 1,000 pages) are also served on Presiding Commissioners; the ALJs for applicable proceedings in compliance with Commission Rules of Practice and Procedure 1.10 (e); and the Energy Division Director.

The CEC would welcome opportunities to streamline the annual report process. Areas where streamlining could be implemented include:

- Reconsideration and clarification of which proceedings and service lists benefit from filing and service of the electronic and hard copy EPIC annual report package.
  - Clarify that the EPIC annual report is only required to be filed in the most recent EPIC proceeding and served on the service list for the most recent EPIC proceeding, the most recent rate case of each IOU, and the Energy Division Director.
  - Allow CEC EPIC applicants to waive service of the annual report, similar to the waiver provision currently afforded to IOU EPIC applicants.
  - Require that each annual report be posted on the reporting Administrator's website, so it is easily accessible to all interested parties.

    - Make use of Commission Rules of Practice and Procedure 1.10 (e) which allows ALJs to waive the requirement that they receive hard copies of the report. This would be particularly helpful for the 2020 EPIC Annual Report to help reduce public health risks due to COVID-19.
- Consider removing the requirement that final EPIC project reports be included in the EPIC annual reports, and instead require only that the final reports be published on the applicable administrator website upon project finalization.
- Reconsider and amend potentially duplicative reporting requirements.
    - Authorize Attachment 6 to D.13-11-025, the Project Status Report, and the project description requirements from the D.13-11-025 Attachment 5 outline, item 4.c. to be adjusted by administrators in coordination with the Energy Division to avoid duplicative reporting, enhance information management, and streamline responses to audit requests.

[*Phase 1 Decision Question 4.b: Should the Commission designate certain administrators to certain administrative tasks or policy areas (e.g., would cybersecurity RD&D be best suited to a particular administrator or type of administrator)?*]

b. The CEC does not recommend that the Commission designate certain Administrators to certain administrative tasks or policy areas.

The CEC does not recommend that the Commission designate certain administrative tasks or policy areas to certain administrators. While there could be streamlining of existing administrative tasks, the program is stronger by having each Administrator responsible for administrative tasks and able to engage in research on policy areas. While cybersecurity is a responsibility of each IOU Administrator for the IOU's systems, the CEC has and can continue to support research related to cybersecurity. For example, in a 2018 grant funding opportunity to develop commercially replicable microgrids, the CEC required each recipient to develop a cybersecurity report to describe steps taken and cybersecurity challenges addressed in each project in a form that can be shared publicly. The lessons learned from these projects will inform other microgrid developers and end users of actions to be taken to ensure the cybersecurity of their microgrids. Having critical lessons learned on topics such as cybersecurity available in the public sphere is an important part of the EPIC program and would not be possible if the CEC is precluded from funding research in this area. The CEC recommends retaining the current approach of not designating certain administrative or policy areas to specific Administrators. However, as noted in 2 above, the CEC believes that designating certain research areas (e.g., AR&D, T&D, and Market Facilitation) to Administrators is appropriate and should be retained.

[*Phase 1 Decision Question 4.c: Are any definition changes or clarifications to the three program areas (Applied Research and Development, Technology Demonstration and Deployment, and Market Facilitation) needed?*]

c. The Commission should refine the definition of Market Facilitation.

The CEC does not believe that any changes are needed to the definitions of Applied Research and Development or Technology Demonstration and Deployment, since there has been little confusion regarding these definitions in the program. However, there has been a misunderstanding by IOUs on the definition of Market Facilitation. D.12-05-037 originally defined Market Facilitation as, "A range of activities including program tracking, market research, education and outreach, regulatory assistance and streamlining, and workforce development to support clean energy technology and strategy deployment." In past proceedings, several IOUs have described market facilitation as an avenue to deploy technologies in low-income and disadvantaged communities through incentive programs. The CEC does not see incentive programs that supports wide scale cost buy-down of commercially available technology to be market facilitation. The CEC considers this Market Support which was prohibited by the Commission in D.12-05-037. Additionally, outreach and technology transfer are required for all research activities and are included as part of the implementation of applied research, TD&D and market facilitation projects.

The CEC believes Market Facilitation is a critical element of a research program that enables innovative new technologies to reach commercialization more efficiently and effectively. Market Facilitation helps overcome knowledge barriers among the various actors responsible for a new technology's development and adoption including entrepreneurs, investors, manufacturers, local governments, procurement managers, customers and others.

One point of clarification is that the CEC does not consider Market Facilitation to be strictly the third stage of the energy innovation pipeline, but rather Market Facilitation conducts focused strategic interventions at key stages of a new technology's development to increase the likelihood of technology adoption. This includes activities to 1) fill gaps within the state's innovation ecosystem needed to support successful clean energy entrepreneurship, and 2) decrease market entry and scale-up barriers by increasing the capacity of local jurisdictions, industry, and businesses to adopt and deploy new clean energy technology solutions into their facilities, communities, and operations.

To reduce the potential for a misrepresentation or overly broad interpretations of the original language in D.12-05-037, the CEC recommends the following definition of "Market Facilitation" for Commission consideration to replace the prior definition:

> A range of activities including program tracking, market research, targeted outreach, and strategic interventions at key stages of a new technology's development and scale-up that will facilitate customer adoption, including entrepreneurial assistance and strategies to overcome technology lock-in barriers.

[*Phase 1 Decision Question 4.d: Should the 10 percent cap on administrative expenses remain or instead increased, due to increased administrative tasks?*]

d. The Cap on Administrative Expenses Should Be Increased for the CEC to 15%.

The CEC believes that the EPIC program could be even more impactful by considering an increase in administrative funds. The current 10% administrative budget is inadequate for the CEC to carry out the core functions of the program, address new administrative responsibilities and tasks, and implement the program in the manner that provides the most benefits to ratepayers. The CEC believes that increasing the administrative expenses to 15% will result in a better program and increase measurable ratepayer benefits. The current administrative budget constrains the CEC's ability to deliver the full value of the program, particularly in the two areas of equity outreach and in ensuring that there is significant market uptake of the technologies that are successfully developed in the EPIC program. Finally, when assessing the administrative budget for EPIC, the Commission should consider the administrative budgets of comparable research programs, and not incentive programs. As outlined below, there are significant differences between a complex research program like EPIC and a typical incentive program where commercially available technology is being deployed.

Equity Outreach: The CEC is very proud of the outreach conducted to date, along with the creation of the Empower Platform, yet the level of effort is insufficient to meet demand. At every community meeting, the message is consistent that underserved communities request that the EPIC program staff come to them, and that increased coordination and assistance be provided.

The California Environmental Justice Alliance (CEJA) releases an annual Environmental Justice Agency Assessment. The assessment examines how CEJA believes state agencies develop, implement, and monitor policies that address environmental justice issues that impact low-income communities and communities of color. In the 2019 assessment, CEJA concluded the following:

> *Consistent with our recommendations from last year, in 2019 the CEC made some promising changes, and we appreciate its ongoing attempts to prioritize equity in improving access to the benefits of clean energy. For example, the CEC released an online platform called Empower Innovation to facilitate community-based organizations' cross-sector partnerships, offered technical assistance on grant applications for community-based organizations, and added environmental justice representatives to several clean energy programs' advisory committees… We encourage continued development of its community engagement process, including technical assistance and a streamlined grant application process for community-based organizations for programs like the Electric Program Investment Charge (EPIC)…Despite the agency's progress, community-based organizations still face many barriers navigating, applying for, and receiving competitive grants like EPIC. We have yet to see if these reforms will improve environmental justice outcomes, but it is promising to see many of our recommendations implemented.*[33]

The CEC is committed to an equitable transition to clean energy and to that end would like to be able to fulfill the recommendations set by CEJA and others to increase the engagement with Community Based Organizations and Environmental Justice organizations.

Technology Scale-up: Technology development and pilot demonstrations are critical steps in the innovation pipeline. However, significant market adoption sometimes benefits from effective hand-offs to programs that influence market adoption such as incentive or regulatory programs. An example of a new effort that supports market uptake of technologies is the Commission's addition of the Policy + Innovation Partnership Areas (PIPA) process. This is designed to bring the technological learnings from the EPIC research into the Commission's regulatory proceedings. This is a strategy to leverage the research results and we applaud that. However, the staff time for the Administrators to participate and inform this process was not envisioned at the launch of the EPIC program. A second example of where added effort could facilitate market uptake is working to get EPIC developed technologies reflected in utility incentive programs.

[33] CEJA Environmental Justice Agency Assessment, 2019, pp. 10-11, available at https://caleja.org/wp-content/uploads/2020/06/CEJA-Agency-Assessment-May-2020-Final-Web2.pdf

EPIC Research Should be Compared to Similar Research Programs, not to Incentive Programs: The CEC makes three points to illuminate the comparison of EPIC to other programs:

- Research tasks are vastly different than incentive/rebate program tasks;
- Workload analysis makes evident that the current administrative allocation does not adequately cover core functions; and
- A 5% increase in administrative funds would be aligned with the low end of comparable research programs.

Research tasks are vastly different than incentive/rebate program tasks: As the CEC noted in Phase 1 Opening and Reply Briefs, the CEC believes that the administrative requirements of an effective R&D program are much greater than a typical incentive deployment program for commercially available technologies.

When the Commission established the 10% cap in D.12-05-037, the Commission noted that "it is difficult to identify a rationale that would justify departing from our general practice and precedent of a 10% administrative cap for the energy efficiency, CSI, and SGIP programs."[21] The energy efficiency, CSI, and SGIP programs are deployment programs that entail relatively simpler administration and are completed much faster than a research program. In these types of programs, the eligibility criteria are typically established once at the beginning of the program for incentive payments for deployment of commercially-available technologies; then the program administrator reviews the applications of qualifying applicants against the eligibility criteria before approving an incentive and the subsequent incentive payment.

The CEC has experience running both deployment programs and research programs and is therefore familiar with the difference. One example is the CEC administered Food Production Investment Program. This program provides grants for food producers to reduce on-site energy and GHG intensity through upgrades of commercially available technologies. The program was complicated to set up and required significant industry input and technology investigation to determine appropriate performance targets. However, once established, each subsequent grant solicitation is nearly cookie cutter. Contrast this to a research program where each solicitation is complex, unique, and requires significant upfront investigation.

A research program is not only more complex in scope but also in the implementation steps required. This is particularly true for a research program with such diverse topics as CEC's EPIC program. Below are six key differences in what is required to properly administer a successful research program that are not required in a typical incentive program. These differences are substantial and require much more technical expertise, market engagement, and project oversight than a typical incentive program.

Program Scope: The electricity system is complex and the state's policy goals are aggressive, requiring a robust suite of technology solutions. The expertise required to master this breadth and depth must be equally robust and current.

- Deployment programs are typically focused on a limited technology area such as residential energy efficiency (e.g., efficient lighting or HVAC incentives) or solar generation incentives, which support the deployment of commercially available technologies. For example, an HVAC incentive program might encourage installation of equipment above a certain efficiency with the primary objective of driving down the cost to increase market adoption. The elements of program design are relatively simple to establish and manage.
- The EPIC program must pursue multiple strategies/technologies to accelerate achievement of zero carbon energy by 2045. Staff need to be well-versed in the policy drivers and the technical barriers to achieving these policy objectives. Each strategy requires a unique set of expertise, and a diverse staff to encompass the diversity of expertise required.
- Technical areas covered by CEC research includes solar, wind, geothermal, and biomass generation; microgrids and energy storage; energy efficiency and building decarbonization solutions; load flexibility; vehicle electrification; industrial process efficiency; and climate science, as examples. Each of these technology areas, breaks down into subcomponents. For example, building efficiency includes an assessment of promising innovation in lighting, plug load management, envelope improvements, fenestration advancements, and heating and cooling strategies, among others. This broad and deep scope is necessary in order to build a research portfolio that addresses the complexity of the electricity system and key policy drivers in the state. No one solution is going to achieve economy-wide decarbonization.
- The breadth of technology areas continues to grow with greater interest in solutions to address wildfires and public safety power shutoffs or to expand solutions such as offshore wind and green electrolytic hydrogen, as well as load flexibility strategies to

address evening ramp demand as intermittent renewables ramp down, but demand remains high.

Program Expertise: An R&D program relies on understanding commercial and emerging technologies and strategies in all the areas mentioned above. In contrast, incentive programs focus on deploying commercially available technologies.

- Staff must have deep and current expertise in existing technologies and their performance attributes, to establish a baseline that new technologies must exceed to further policy goals. Staff analyze product strengths and weaknesses, barriers to deployment, and performance and cost targets in order for new technologies to achieve commercial deployment.
- Staff must keep up to date on emerging technologies to assess whether they are promising enough in their development that EPIC grant funding can help them move from laboratory pilot, to real world demonstration, to deployment. This requires a substantial amount of time for staff to conduct literature research, participate in relevant technology specific conferences and workshops at the state and national levels (either in person or remotely), and engage with researchers, end-users, and start-ups to understand their technology's maturity and path to market. For example, to develop a solicitation on long-duration energy storage, staff needed to assess the energy storage industry to identify whether existing systems could be scaled up from four hours (current design) to a larger system and to identify the appropriate design target, which ultimately was set at 10 hours. The focus was on non-lithium ion, so it required understanding the landscape for other energy storage technologies such as flywheels, flow batteries, and alternative chemistries.

Solicitation Development: R&D grant programs require the ongoing development of unique competitive solicitations to address specific challenges. These are not required of deployment programs.

- In fiscal year 2020-2021, the CEC is planning 20 solicitations to cover the landscape of potential solutions across technology areas of efficiency, renewables, storage, microgrids, and electrification of transportation. As noted above, there is substantial research that needs to be conducted to frame out a research topic.

- For each solicitation, in addition to consultation with utilities, staff engage with other governmental research programs such as the U.S. Department of Energy and New York State Energy Research and Development Authority (NYSERDA) as well as other state agencies, such as the Commission, the California Air Resources Board (CARB), the Strategic Growth Council (SGC), the California Department of Forestry and Fire Protection (CAL FIRE), the Governor's Office of Emergency services (CalOES). Coordination is critical to ensuring state R&D programs are complementary and that the EPIC program is addressing challenges informed by government partners.
- Staff may conduct public workshops to solicit broader stakeholder input. Staff then reviews all the information collected and incorporates it into a concept memo for review and approval by CEC leadership prior to developing the solicitation. Staff also coordinates with IOU Administrators to leverage knowledge and prevent areas of overlap.
- The effort to scope and draft one solicitation averages approximately 0.6 person years (PY) in staff resources. That equates to 12 PY just for solicitation development. This work has some overlap with the previous bullet but much of the effort captured here is the administrative part of taking the early stage concept and reaching the point of a published solicitation. This does not include the effort to have a team of internal experts carefully evaluate proposals, develop and release a Notice of Proposed Award, debrief unsuccessful applicants, and finalize agreements as a result of the awards.
- Ensuring that benefits to underserved communities are reflected in the solicitation scope and scoring requires thoughtful design and more than simply locating a project in a disadvantaged community. This required a redesign of how solicitations are scoped and how proposals are scored and was informed by community engagement.

Agreement Management: A research grant requires much more hands-on management than the deployment of commercial technologies. Also, research grants are typically managed for a longer time period, resulting in more staff resources. The CEC's EPIC staff manage, on average, 250 simultaneous EPIC agreements. For each project, staff are closely engaged in the progress of the project by working with the recipient team to oversee the research throughout the project. Proactive and engaged management is a critical component to an impactful research program. Elements of proactive management include:

- Staff stay engaged with research progress by conducting progress meetings on at least a monthly basis and reviewing written monthly progress reports. Staff provide verbal and written feedback to recipients on progress.
- Where any problems arise in the research, the agreement manager either alone or with additional technical experts, assists the recipient in overcoming challenges. It takes a certain amount of technical acumen to evaluate whether a problematic project can overcome its issues and still be completed successfully.
- Staff review and comment on technical deliverables. This requires a clear understanding of the underlying science, and they must be able to review for clarity and accuracy.
- Final reports are reviewed for both technical validity and that executive summaries are clear to a lay reader to ensure that policy makers and others can use the results of EPIC research without needing to be experts in the field.
- Staff and the recipient conduct regular Technical Advisory Committee (TAC) and Critical Project Review (CPR) meetings. The TAC typically includes members from the research field, industrial/manufacture partners, community-based organizations, end-user groups, and more. The purpose is to solicit feedback from the TAC and adjust research plans in response to progress and issues raised, resulting in stronger projects.
- CPRs are scheduled at critical milestones where the CEC can make a go/no-go decision on the project. The recipient discusses the progress of the project, whether changes are needed, any problems or risks, and any changes made as a result of the TAC input.
- The uncertainties of research mean that changes may need to be made during the project. Staff works with recipients and management to amend agreements, as necessary.
- As a project is completing staff conduct a final meeting to evaluate project performance and ratepayer benefits. Although rates of project failure are low, there are additional steps required if an agreement must be terminated without completing the scope of work, or when the CEC makes adverse project audit findings.
- This oversight and due diligence are important as good stewards of the rate payers' dollars.

Technology and Knowledge Transfer: One of the most important elements of a technology R&D program that differentiates it from a deployment program is the dissemination of knowledge and the successful maturation of a technology toward commercial success to support ratepayers. The CEC employs multiple strategies for technology and knowledge transfer:

- CEC leverages the TAC for technology and knowledge transfer. In addition to bringing expertise to help shape the usefulness of the research, TAC members also provide an important channel to communicate results to similar stakeholders.
- Recipients are required to conduct technology and knowledge transfer during the project. This usually includes presentation at key national and international conferences, publishing papers, or engaging with potential future customers to secure sales of demonstrated technologies. CEC requires this step to instill the expectation that research is not a goal in itself; the expectation is that results be built on, and ultimately result is actionable results, such as bringing a technology to market.
- Agreement managers monitor this work and additionally assemble the lessons learned from the research to inform future work. Staff however are stretched thin to fully synthesize the results across multiple projects and to be able to share that combined knowledge set more broadly. The PIPAs will support this goal to a limited extent but even the PIPAs can only review the results of a select number of projects. The CEC believes that more can be extracted from the existing research with additional resources. Additionally, more effort is needed to share the synthesized information broadly, including to the Commission's proceedings.

Technical Support: In addition to providing for staff positions, administration funds are used to obtain technical support from non-CEC staff (e.g., consultants) for critical program functions such as:

- Provide topical expertise reviews of proposals for score team consideration.
- Assist with ADA compliance of final reports.
- Administration of the CalSEED small grant program.[34]

[34] The CalSEED program awards small grants and provides access to business and technical services to entrepreneurs seeking to develop a technical feasibility case for their technologies. The California Clean Energy Fund is the administrator of the CEC's CalSEED initiative under CEC Agreement No. 300-15-007.

Workload analysis makes evident that the current administrative allocation does not adequately cover core functions: Additionally, the EPIC administrative funding does not cover the full cost of CEC administration.

In the past, the CEC has needed to draw on funds from its Energy Resources Programs Account (ERPA) for necessary legal and grant support functions of the EPIC program. This is not sustainable as a permanent solution as the ERPA fund is declining in revenue, as the CEC's responsibilities grow with new legislative mandates and the state's commitment to accelerate achievement of our climate goals.

In the CEC's Phase 1 Opening and Reply briefs, the CEC noted that administrative requirements for the EPIC program have increased over time. CEC staff have been stretched to meet administrative requirements and to continually evolve and improve the program. These activities and the expanding nature of the clean energy market have made it more difficult for staff to keep up with current market technologies and trends, manage ongoing agreements, synthesize research results, and meet the demand for additional program outreach. The recommendations from the EPIC Evaluation will also add more administrative tasks, specifically in providing more opportunities for stakeholder input, coordinating across Administrators, participating in PIPAs.

The CEC's Energy Research and Development Division conducted an analysis of workload and PY needs to administer the EPIC program. The results show the division is significantly under resourced and identified a staffing deficit in EPIC of 20.5 PY. The results identified the following:

- Staff is 25% under-resourced.
- Administration is 30% under-resourced.
- Supervisors are 76% under-resourced.
- Office Managers are over 118% under-resourced.
- Division management is 145% under-resourced.

Most of the PY deficit are in the upper management levels. Upper management and highly technical staff expertise require higher salaries but are necessary to over-see program implementation and provide the appropriate levels of technical expertise.

Alignment with comparable research programs: The CEC believes that an increase of up to 5% to the administrative cap is warranted and that the administrative cap would still remain substantially less than typical peer energy R&D programs. Table 2 below identifies the total program allocation, total administrative budget, and the administration budget as a percentage of total program allocation for typical energy R&D programs administered by various entities.

Table 2: Administration Budgets of Typical Peer Energy R&D Programs

Research Entity	Total Allocation (Research and Admin)	Program Administration	% of Allocation
DOE OE[35]	$68,087	$13,824	20%
DOE EERE[36]	$831,348	$128,669	15%
NYSERDA[37]	$250,842	$34,541	14%
SWRI[38]	$554,723	$221,647	40%
GTI[39]	$87,203	$32,688	37%

In conclusion, the CEC believes it is doing an excellent job in conceptualizing needed R&D and executing a world class program. However, as mentioned in the opening paragraph of this section, three areas suffer due to staffing limitations, 1) sufficient equity outreach, 2) maximum market uptake of the technologies that are successfully developed in the EPIC program, and 3) adequate resources to provide core R&D functions.

5. <u>EPIC Evaluation Recommendations.</u>

[*Phase 1 Decision Question 5: How Should the Commission address recommendations from the Evergreen Evaluation that have not already been fully addressed?*]

D.18-10-052, Appendix B, provides a list of recommendations from the EPIC Evaluation to be addressed in this rulemaking. This evaluation was completed in 2017, and much has been done already by the Commission and Administrators to address to enhance the EPIC program in

[35] Department of Energy (DOE) FY 2020 Congressional Budget Request, March 2019. Volume 3, Part 1. FY19 Enacted budget for Office of Electricity (OE), Washington Headquarters, p. 59.
[36] Department of Energy (DOE) FY 2020 Congressional Budget Request, March 2019. Volume 3, Part 2. FY19 Enacted budget for Office of Energy Efficiency and Renewable Energy (EERE), Washington Headquarters, p. 257.
[37] New York State Energy Research and Development Authority (NYSERDA) Fiscal Year 2018-19 Budget and Financial Plan. Market Development/Innovation & Research Expenses, p. 12.
[38] Southwest Research Institute (SWRI) Annual Report 2018 (for fiscal year ending September 2018), p. 24.
[39] Gas Technology Institute (GTI) and Subsidiaries Consolidated Financial Report with Additional Information, December 31, 2016, GTI Budget, p. 45.

response to the evaluation. The CEC provides the following suggested approaches for addressing each of the Evergreen Economic recommendations that the Commission has not already addressed.

a. Program Administration.

[*EPIC Evaluation Recommendation 1.a: The administrators provide more detailed justification for non-competitive bidding in their Annual Reports.*]

i. The current approach for CEC to report non-competitive bidding is sufficient.

The CEC has rarely granted non-competitive awards. Of the 384 awards made to date by the CEC in EPIC, only three (0.8%) were awarded non-competitively. All three were awarded in 2016 through interagency agreements with UC Merced, UC Irvine, and UCLA. The total of the awards was $2,500,000 and resulted in bringing an additional $12,500,000 to the state from the U.S. Department of Energy. The CEC followed the reporting requirements for non-competitive awards specified in Public Resources Code section 25711.5, subdivision (h)(2)(A), which requires the CEC to notify the Joint Legislative Budget Committee at least 60 days in advance in writing of the intent to issue a non-competitive award. The CEC also reported the awards as required by D.13-11-025, which requires reporting the awards and the justification for making them in the annual report to the Commission. This information was provided in the CEC's 2016 Annual Report.[40]

The CEC believes that the process identified in Public Resources Code section 25711.5 (h)(2)(A) and D.13-11-025 provides sufficient transparency and oversight of the CEC's non-competitive awards, particularly since non-competitive awards are a rare exception, the ones that have occurred are justified by the value received by the state, and the vast majority of the CEC's awards are based on a competitive process.

[*EPIC Evaluation Recommendation 1.b: The CPUC consider requiring a review of the non-competitive bidding cases before they are contracted.*]

ii. Existing requirements for the CEC to report non-competitive awards are sufficient for giving notice in advance.

As noted in the response in section 5.a.i above, there are already requirements on the CEC for advance reporting of non-competitive awards in Public Resources Code section 25711,

[40] CEC Electric Program Investment Charge 2016 Annual Report, pp. 52 and A2-A3.

subdivision (h)(2)(A). The CEC believes that this process is sufficient, and no additional requirements are necessary because it relies on review by the Joint Legislative Budget Committee.

[*EPIC Evaluation Recommendation 1.c: The CPUC require the IOUs to specify the funding amount for the non-competitive award to make it easier to assess the fraction of funding that is being directly awarded.*]

iii. The CEC has no recommendation on IOU reporting requirements for non-competitive awards.

The CEC has no recommendation for this item, as it pertains to information to be shared between the Commission and the individual IOU Administrators.

b. Portfolio Optimization

[*EPIC Evaluation Recommendation 2.a: The CPUC establish priorities among its current policy goals and funding criteria to better guide the administrators in their investment planning.*]

i. Policy priorities for the program should be established in the investment plan development process.

As noted in the response in section 3.c above, the CEC believes that the current process for setting policy priorities in the investment plan development process is robust and provides sufficient opportunities to align EPIC research to state policies. The CEC believes that the scoping memo for the investment plan is the most critical opportunity for the Commission to provide input on policy priorities, since this will ensure that the input is included from the beginning. The CEC ensures stakeholder engagement through workshops and written comments during the development of the CEC's draft investment plan. These provide opportunities for the CEC to ensure alignment of research initiatives to policy priorities. The Commission review of the CEC investment plan, which includes additional opportunities for stakeholder input, provides a final opportunity to ensure alignment of the research initiatives in the CEC investment plan to policy priorities.

[*EPIC Evaluation Recommendation 2.b: The administrators collaborate in categorizing and summarizing projects (such as by technology type and/or policy area) and review projects by topic areas to ensure that the portfolio of projects effectively supports key policy goals.*]

ii. The CEC Will Continue to Categorize Its Portfolio of Projects to Key Policy Goals.

As noted above in section 3.c, the CEC has a robust process for categorizing its portfolio of projects to key policy priorities. In addition, as part of the development of the EPIC 3 investment plans, the CEC worked with the IOU Administrators to develop a matrix that categorized and summarized projects and aligned them with policy goals.[41] The IOUs committed in their Research Administration Plan (RAP)[42] to work with the CEC to update the matrix. The Commission's decision approving the RAP directed the IOU Administrators to continue to collaborate on an enhanced matrix.[43] The IOU Administrators have been coordinating with CEC to develop an enhanced reporting matrix to meet the requirements of D.20-02-003. If the IOUs remain Administrators, the CEC recommends that the Administrators continue to coordinate with the PICG Coordinator in their effort to develop a comprehensive, searchable, public database on EPIC funded research aligned to policy drivers. If the Commission removes the IOUs as Administrators, the CEC will continue to apply its robust process for categorizing its portfolio of projects to key policy priorities.

[*EPIC Evaluation Recommendation 2.c: The administrators' Investment Plans are closely reviewed to ensure they not only meet program requirements, but that they are also effective in advancing the energy policy priorities that the CPUC identifies.*]

iii. Current review processes provide ample opportunity to ensure research meets program requirements and will be effective in advancing energy policy priorities.

The EPIC Evaluation noted that "the CEC's investment planning process produces plans that have a high likelihood of producing benefits for California ratepayers and achieving other EPIC goals" and that "there is a strong explicit alignment of program initiatives with relevant energy policy goals and transparency in the investment planning."[44] As described in the response in section 3.c above and summarized below, the development and review of the CEC's investment

[41] Joint Comparison Matrix of Administrators' Electric Program Investment Charge Proposed 2018 Through 2020 Triennial Investment Plans, September 1, 2017.
[42] Joint Application of Southern California Edison Company (U 338-E), Pacific Gas and Electric Company (U 39-E), and San Diego Gas & Electric Company (U 902-E) for Approval of the Research Administration Plan for the Electric Program Investment Charge, April 23, 2019, p. 12
[43] D.20-02-003, pp.14-15.
[44] EPIC Evaluation. p. 11-7.

plan is a multi-step process, with continual engagement of the CEC Commissioners and with many opportunities for the Commission and stakeholders to review and provide input.

- Investment Plan Scoping Memo: The Commission initiates the process and provides guidance on policy priorities in the scoping memo for the investment plan proceeding.
- Public Workshop on Initiatives: CEC coordinates with the IOU Administrators to develop high level initiatives and the Administrators hold joint public workshops to solicit input on the research initiatives. The Commission has routinely participated in these workshops.
- Stakeholder Written Comment: CEC provides the opportunity for stakeholders to provide written comments to recommend research topics that align with initiatives for consideration by the CEC when drafting the investment plan.
- Draft Investment Plan Comment Period: CEC releases the draft investment plan for stakeholder comment.
- CEC Business Meeting: The draft final plan is considered for approval at a CEC Business Meeting, which includes the opportunity for additional public comment.
- Commission Review: The CEC investment plan and related application are filed with the Commission and served on parties for review and consideration by the Commission.
- Stakeholder Input to the Commission: Through the EPIC proceeding, the Commission solicits comments on the proposed investment plan from parties and members of the public.
- Final Decision: The Commission considers comments from parties and members of the public, provides additional direction to the CEC, as necessary, and approves the investment plan, as appropriate.

The CEC believes that this process provides ample transparency for the development of the investment plan as well as multiple opportunities for the Commission and stakeholders to provide input and ensure that the plan meets program requirements and advances energy policy priorities.

c. Stakeholder Engagement

[*EPIC Evaluation Recommendation 2.d: The administrators engage more stakeholders earlier in the investment planning process.*]

i. While the CEC has robust stakeholder engagement in the investment plan development process, the CEC can explore more ways for stakeholders to provide early input.

The EPIC Evaluation found that "the CEC provides comprehensive information about its investment plans, and its processes are consistent with other peer RD&D programs."[45] The only recommendation directed to the CEC was for it to engage external subject matter experts earlier in the development of research initiatives. The EPIC Evaluation noted that while CEC subject matter experts collaborate with other external subject matter experts, other peer programs engage industry earlier in the investment plan development process.

The CEC agrees with the evaluation that CEC subject matter experts collaborate with external subject matter experts, and the CEC notes that the collaboration is extensive and continuous. CEC staff regularly engage with subject matter experts focused on clean energy at DOE (headquarters offices and national laboratories), NYSERDA, national and California non-profits, academia, and industry. This interaction occurs as frequently as monthly in some cases and others on an ad hoc basis. The CEC disagrees with the finding that other peer programs engage industry earlier, as we currently employ multiple strategies to gather research needs from stakeholders.

These early stage opportunities for input are not always tagged as "Investment Plan" events, but they are equally informative to the process:

- First, the CEC funds research projects to develop research roadmaps. For example, the CEC funded a project to develop a Distributed Energy Resource Research Roadmap, which covers a wide range of topics relative to clean energy technology research needs. That project included four public workshops to solicit input on research priorities and will produce a final report capturing this input by the end of 2020. This information will be used to develop the EPIC 4 investment plan.
- Second, the CEC uses the stakeholder involvement of multi-agency roadmap efforts, such as the VGI roadmap to identify research priorities. The CEC holds topical forums that enable the CEC to gather research needs, such as the Powering Resilient Communities Through Advanced Energy Technologies forum held in Long Beach on February 25, 2020.

[45] Electric Program Investment Charge (EPIC) Evaluation, p. 11-9

- Third, the CEC holds technology-specific workshops to gather research needs, such as the energy storage workshop held in conjunction with the Energy Storage North America 2018 conference, which has helped the CEC shape near-term and long-term research needs related to energy storage to support multiple applications in the state.

The CEC feels that this is a robust approach to soliciting stakeholder input in advance of developing investment initiatives, such as for EPIC 4, and the CEC commits to early involvement of subject matter experts in the investment plan development process.

[*EPIC Evaluation Recommendation 2.a: The IOUs provide more comprehensive information, to allow time for more meaningful engagement.*]

ii. The CEC has no recommendation on the level of information provided by the IOUs.

The CEC has no recommendation for this item.

d. Administrator Project Selection Processes

[*EPIC Evaluation Recommendation 3.a: The IOUs develop more transparent project selection criteria.*]

i. The CEC has no recommendation on the IOU development of more transparent project selection criteria.

The CEC has no recommendation for this item but can share its selection process with the IOUs if requested.

[*EPIC Evaluation Recommendation 3.b: The IOUs share project research plans and budgets with the CPUC and the public, at least one month prior to launch.*]

ii. The CEC has no recommendation on the timing of IOUs sharing project research plans and budgets.

The CEC has no recommendation for this item.

e. Match Funding

[*EPIC Evaluation Recommendation 3.d: The CEC consider modifying the match funding requirement for TD&D projects and make it optional.*]

i. **The CEC agrees that match funding requirements can be challenging for some recipients and is continually assessing options to minimize potential hardship for certain entities.**

As noted in the CEC's response to the EPIC Evaluation, the CEC has flexibly in match funding requirements, and waives these requirements in certain situations. The CEC believes that requiring match funding for TD&D projects is prudent because these projects usually focus on technologies and strategies that are near commercialization. The CEC believes that match funds provide "skin in the game" and ensures match partners share the risk and reward of the project with the state. It is also an indicator of market interest in the technology. Also, requiring match funds extends the EPIC funding and enables the CEC to fund more research. Other energy R&D programs, such as the Department of Energy's Office of Energy Efficiency and Renewable Energy and Advanced Research Projects Agency - Energy (ARPA-E) and NYSERDA's Technology and Market Development Program require match funding, depending on stage of technology development.[46]

However, the CEC recognizes that certain recipients may have challenges identifying partners to provide match funding. The CEC can adjust the level of match required to help encourage projects in communities the state has prioritized such as low income, disadvantaged, and tribal communities. For example, in a recent solicitation focused on demonstrating long-duration energy storage, the CEC created separate competitive groups, with two groups limited to certain applications. The first competitive group was broadly open to any application and required 50% match. However, the second and third competitive groups were limited to a Tribal application and a low income/disadvantaged community, respectively, and the match funding was reduced to 20%. A fourth competitive group in the solicitation required a demonstration in residential applications and also required only 20% match funding. Through this approach, CEC was able to ensure that demonstrations were possible in end uses that might not draw the same level of match funding, particularly in areas that could benefit the greatest from the resilience of long duration energy storage.

[46] Opening Comments of the California Energy Commission Regarding Electric Program Investment Charge Evaluation, October 2, 2017, pp. 11-12.

f. Intellectual Property Terms

[*EPIC Evaluation Recommendation 3.e: The CPUC review IP rules or guidance developed for the Department of Energy's Small Business Innovation Research (SBIR) Program to explore possible opportunities for easing IP requirements. Regardless of the outcome of any such efforts, the CPUC should ensure that IP requirements are communicated effectively.*]

i. The CEC supports clarification of the intellectual property requirements, but based on its program awards with standard intellectual property provisions, the CEC does not believe changes are needed. Additionally, the CEC questions the need for provisions tailored to specific business or research sectors given the flexibility already built into the current requirements.

In section II.3.4 of its EPIC Evaluation, Evergreen recommended that the Commission explore possible opportunities for easing the intellectual property (IP) requirements, and regardless of the outcome of such efforts, should ensure that the IP requirements are communicated effectively.

The CEC's believes its IP requirements are reasonable. These requirements were established in consultation with the State Treasurer's Office, comply with applicable statutes, and are consistent with D.13-11-025.

Public Resources Code section 25711.5, as enacted by SB 96,[47] directs the CEC to take the following action with respect to IP rights:

> In consultation with the Treasurer, establish terms that shall be imposed as a condition to receipt of funding for the state to accrue an intellectual property interest or royalties that may derive from project funded by the EPIC program. …
> (Pub. Util. Code, sec. 25711.5, subd. (b).)

In D.13-11-025, the Commission recognized the Legislature's actions granting the CEC authority to decide IP rights, stating "the Legislature has clearly placed PRC § 25711.5's directives for the appropriate treatment of IP generated by CEC awards and associated royalties on the CEC."[48]

While the CEC supports clarification of the IP requirements, based on its program awards with standard intellectual property provisions, the CEC does not believe changes are needed.

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[47] SB 96 (Stats. 2013, ch. 356).
[48] D.13-11-025, p. 71.

Additionally, the CEC questions the need for IP provisions tailored to specific business or research sectors given the current flexibility that is already built into the Commission's IP requirements.

In the EPIC Evaluation, Evergreen does not identify any specific issues with the CEC's IP requirements. Issues regarding the IP requirements have been raised by the IOU Administrators. For example, the IOUs recommended that the Commission reconsider the structural mechanisms of IP, including for such issues as indemnification and march-in rights. In the joint IOU comments on the OIR, the IOUs encouraged the Commission to clarify that the IP indemnification is limited to infringement, and does not represent unbounded liability for participants looking to partner with the IOUs, and additionally encouraged the Commission to re-examine march-in rights, so the IP requirements are not constrictive, and instead allow for a diverse range of participants, including academia, national labs and vendors, to partner with EPIC Administrators on projects that benefit California's electric ratepayers.[49]

The CEC regularly awards agreements with standard IP provisions to these entities, so it is unclear how the IP requirements are limiting the IOUs' ability to partner with academia, national labs, and vendors on EPIC projects that benefit the IOUs' ratepayers funding the EPIC program.

The Commission's IP indemnification requirements were established in D.13-11-025. This decision requires the IOUs for all EPIC-funded IP interests the IOUs enjoy, for the IOUs and load serving entities (LSEs) to hold the Commission, CEC, and their respective employees free from liability for the use of such IP. All EPIC awarded grants and contracts must contain a Hold Harmless Clause, so that the EPIC grantees and contractors hold the Commission, CEC, and their employee free from liability.[50] In D.15-04-020, the Commission clarified that the indemnification and Hold Harmless Clause requirements do not apply to government entities that may not legally indemnify or hold a third party harmless.[51]

To better understand the IOUs' concerns, it would be helpful to know how the IOUs are applying the indemnification and Hold Harmless Clause requirements to prospective project partners, such that the requirements expose these partners to unbounded liability.

[49] Joint Opening Comments of Southern California Edison Company (U-338-E), Pacific Gas and Electric Company (U 39-E), and San Diego Gas & Electric Company (U 902-E) on Order Instituting Rulemaking, December 2, 2019, pp. 9-10.
[50] D.13-11-025, OP 28.
[51] D.15-04-020, OP 20.

D.13-11-025 also established the IP requirements regarding march-in rights. The decision requires the IOUs to either own for the benefit of ratepayers the IP developed by EPIC investments or, absent IOU ownership of the IP for the benefit of ratepayers, the IOUs must at a minimum hold a nonexclusive, transferrable, irrevocable, royalty-free and cost-free, perpetual license to be used for the benefit of ratepayers that funded the IP. Also, the IOUs must in all cases require that both they and the State of California (with administration by the Commission) hold a direct license to the IP to use it for governmental purposes (such as for reporting results to the Legislature). Additionally, the IOUs in all cases must ensure the State holds march-in rights.[52]

In D.13-11-025, the Commission agreed with the Office of Ratepayer Advocate's position that the State's march-in rights should not be limited to circumstances where the IP owner does not undertake to patent the IP, but should extend to situations where the IP owner does not undertake to patent the IP in a manner that benefits ratepayers. In other words, even if the IP owner patents the IP, albeit in a manner that does not benefit ratepayers, the State should still be allowed to exercise march-in rights.[53]

In addition, with respect to IP ownership, the Commission noted in D.13-11-025, "We find it reasonable for the IOUs to be permitted to negotiate the IP ownership on a contract-by-contract basis, whether the IP is owned by or only licensed to the IOUs or the State."[54]

Lastly, in D.15-04-020 the Commission established a process for the EPIC Administrators to request exception to the Commission's IP requirements for EPIC-funded projects. Specifically, the decision stated:

> "If during their implementation of this program, an administrator identifies an overwhelming justification of the need for a specific waiver of our EPIC IP requirements at the individual project/solicitation level, we will allow them (except for the CEC) to file with the Energy Division a Tier 3 Advice Letter making this request. The CEC may provide a business letter to the Energy Division and serve it on the service list in this consolidated proceeding. The CEC will not implement any waiver until it is provided with a letter confirming the waiver from the Energy Division. [. . .] Such filing shall detail the specific requirements at issue and a demonstration of quantifiable benefits that are at risk should the waiver not be granted. The filing shall be a Tier 3 Advice Letter, because we wish to balance the need for comments, due process, and careful review for expediency. The Tier

[52] D.13-11-025, OP 32.
[53] D.13-11-025, p. 85.
[54] D.13-11-025, pp.77-78.

3/business letter process is intended to be used in limited circumstances and broad requests with program-wide impacts will not be an appropriate use of the waiver."[55]

Based on the requirements of D.13-11-025 and D.15-04-020, it appears the IOUs have the flexibility to negotiate IP ownership on a contract-by-contract basis, to own the IP or only take a license in the IP, and may also request a waiver from the Commission to excuse an individual project or solicitation from the Commission's IP requirements. In light of this flexibility, it is not clear why additional flexibility is necessary to allow the IOUs to partner with academia, national labs, and other prospective project participants.

As the CEC noted in its response to the joint IOU comments on the OIR, it would be helpful to understand why the waiver process established in D.15-04-020 cannot be used to excuse prospective project participants from the Commission's IP requirements, in those cases where the participant's involvement in a project is critical and overwhelmingly justified. This waiver process would appear to lend itself to any EPIC partner, be it academia, national labs, small business, entrepreneur, or other prospective project participant.

g. Flexibility

[*EPIC Evaluation Recommendation 3.f: The administrators should use the Advice Letter process only for requesting substantive changes to projects or adding new projects that are not covered by one of the existing general descriptions in their Investment Plans.*]

i. The administrators should use the Advice Letter process only for requesting substantive changes to projects or adding new projects that are not covered by one of the research funding initiatives specified in their Investment Plans.

In D.15-09-005 the Commission authorized the IOU Administrators to submit Tier 3 Advice Letters for new EPIC projects between triennial EPIC applications and for material changes to existing projects approved under the IOUs' EPIC investment plans.[56] This decision also authorized the CEC to submit the business letter equivalent of Tier 3 Advice Letters for new EPIC projects between triennial EPIC applications and for material changes to existing projects approved under the CEC's EPIC investment plan.[57] The CEC agrees with this approach and

[55] D.15-04-020, pp. 43-44.
[56] D.15-09-005, OP 1.
[57] D.15-09-005, OP 2.

recommends that the Advice Letter process (or equivalent business letter process for the CEC) only be used when the Administrator is requesting a substantive change to existing projects or adding new projects that are not covered by a research initiative specified in the Administrator's investment plan.

> [*EPIC Evaluation Recommendation 3.g: The CEC explore how and whether it could add more flexibility to its grant request forms and/or research planning process to be able to respond to market and technology changes that occur between the time the project is proposed and the project is launched.*]

ii. To the extent appropriate, the CEC exercises the flexibility available through the state grant management process.

The EPIC Evaluation noted that there are situations where there may be market or technology changes between the time a research proposal is developed by an applicant and the project is awarded. The evaluation report also noted that state grant management requirements may not provide flexibility in these cases. The evaluation recommended that the CEC explore where it could add more flexibility to grant request forms and/or the research planning process.[58]

The CEC reviewed grant management requirements to identify any available flexibility to address changes that may occur between a proposal and an award. The current grant management requirements are meant to ensure an important balance between flexibility to make post award revisions and maintaining the integrity of a competitive process. Allowing applicants to make major changes to the scope of a project after the award can create unfair competition in the application process. For example, an applicant might develop a proposal that scores well, but as the project progresses it becomes apparent that the project may not be achievable as proposed. If the recipient then requests a scope change to ensure the scope is achievable it is no longer the proposal that was scored via a competitive process and unfair to others that proposed but were not awarded funding. To ensure fairness, state agreement management requirements limit the CEC's ability to modify project scope after award because it can undermine the competitive process.

h. Project Assessment Process.

> [*EPIC Evaluation Recommendation 4.a: The administrators share information while projects are in progress with the CPUC and the public on a more frequent basis, such as quarterly. The administrators should collaborate in categorizing and summarizing*

[58] EPIC Evaluation, p. 11-13 – p. 11-14.

projects, as previously recommended (2b), (such as by technology type and/or policy area) so that interested parties can more easily obtain pertinent information on a given topic area.]

i. Existing avenues for sharing information from CEC EPIC projects are robust and widely available.

The EPIC Evaluation stated that the Administrators are in compliance with EPIC program requirements related to information sharing but recommend more frequent sharing of research results, such as quarterly. The CEC recognizes the value in sharing research results widely and agrees that the Administrators are in compliance with EPIC requirements, but the CEC disagrees that quarterly reporting of results would add appreciable benefits. The CEC finds other approaches more effective in sharing information. The CEC already deploys multiple approaches for sharing project information, including through the annual EPIC Symposium, the CEC's Energy Innovation Showcase,[59] the CEC-developed Empower Innovation Platform,[60] CEC web site, and topic-specific forums, workshops, national and state conferences, and the new PIPA workshops. The Innovation Showcase, Empower Innovation Platform, topic specific forums, and PIPA workshops have all been launched since the EPIC Evaluation.

The CEC believes that research results should be more strategically shared when they are sufficiently substantive, timely, and in venues where the most interested stakeholders can learn, as is the current practice for the CEC. For example, the CEC hosts topic-specific events throughout the year. These events help ensure project-specific knowledge is disseminated to stakeholder groups who are key to further scale-up and adoption of EPIC-funded technologies. Several recent examples include:

- The CEC hosted a forum on technologies to provide community resilience on February 25, 2020, where the CEC provided the opportunity to share current research results from multiple resiliency related research portfolios, including the use of microgrids, energy storage, and forest biomass for communities.
- When the CEC issued grants in the summer of 2019 under the state's School Bus Replacement Program to procure electric buses, the CEC immediately convened a workshop on August 30, 2019 to share best practices for integrating buses into

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[59] The Energy Innovation Showcase website is accessible at http://innovation.energy.ca.gov.
[60] The Empower Innovation Platform website is accessible at https://www.empowerinnovation.net/.

operations. The best practices came from ongoing EPIC projects with the Santa Clara Valley Transportation Authority and the Antelope Valley Transit Authority, which had studied best practices for integrating electric buses into pre-existing routes and operating buses on those routes (i.e., best practices for drivers).

The CEC also ensures that recipients are engaged in other forums and conferences to share interim research results. For example, every EPIC project has a standard task for technology transfer. One key approach that recipients use to meet this requirement is to provide papers and presentations at conferences in California and nationally to share the results of their research as they become available. The CEC recipients also are required to provide periodic updates to a technical advisory committee (TAC), which is established for each project. The TAC reviews projects at key points to provide guidance and to share lessons learned. TACs are developed with a diversity of stakeholders that would be interested in the results of the research, including representatives of end users, project developers, and relevant agencies such as the California Independent System Operator (CAISO) and the Commission.

In addition, the PICG Coordinator will be convening an annual public workshop and topic-specific public workshops on the PIPA which will be selected by the PICG on an annual basis. The public workshops will be used to share information from all EPIC Administrators on critical topics identified by the PICG. The PICG will select three to five PIPAs a year.

The CEC believes that the combination of existing avenues to share research results is robust and sufficient. This includes:

- CEC-led annual EPIC Symposium – covers the breadth of EPIC research results to a wide stakeholder audience.
- Multi-agency technology roadmap workshops – provides an avenue for EPIC research to directly inform state policy and shape future research.
- Topic-specific forums and workshops – brings technical experts and other stakeholders for in-depth discussions of discrete challenges to meeting state policy and EPIC research results.
- CEC Integrated Energy Policy Report workshops – draws on EPIC research results in public workshops to inform recommendations on state policy.

- Relevant Commission workshops (e.g., associated with specific rulemakings) – the Commission calls on EPIC researchers to describe research results that may inform proceedings.
- PICG Annual Workshop – to be held in 2021 and is expected to provide results from CEC and IOU EPIC research to a broad set of stakeholders.
- PIPA Workshops (3 – 5 per year) – like CEC forums, the PIPA workshops share research results in specific topic areas.
- Pre-solicitation workshops – CEC provides information from relevant past research that has shaped a new solicitation.
- Project-specific TACs – as noted above, TAC meetings provide an opportunity to share research results to TAC members, who further disseminate the information.
- IOU-led Fall Workshop – like the EPIC Symposium, this workshop enables the CEC to share research results on a broad spectrum of topics.
- Requirements for recipients to conduct technology transfer – grant recipients present findings at state and national conferences and workshops, publish papers in academic journals, and develop fact sheets and other materials that summarize research results for a broad audience.

The CEC sees no value in the addition of new, more frequent (e.g., quarterly) reporting, because it is unnecessary and would be an additional administrative burden on the EPIC Administrators.

> [*EPIC Evaluation Recommendation 4.b: The administrators collaborate and jointly convene a quarterly workshop to share results about project status and lessons to-date on a topical basis, with engagement from stakeholders on topics that are of interest.*]

ii. The CEC does not believe that a joint Administrator quarterly workshop is necessary.

The Commission and the Administrators have taken actions to address this EPIC Evaluation recommendation through better stakeholder engagement processes. The Commission established the PICG and the PIPA workshops. The CEC implemented topic-specific forums, the Innovation Showcase, and the Empower Innovation Platform. As noted in the response for the previous section, the CEC believes that information sharing on specific topics and in different media is engages stakeholders better than convening events such as quarterly workshops. The

Administrators can more strategically share results on specific topics in other forums and workshops, such as those hosted by the CEC, IOUs, or the PICG. Also, based on the CEC's experience in organizing the annual CEC Symposium and other broad research workshops, the level of effort to organize four more broad workshops would be a substantial burden under the existing administrative cost caps.

> [*EPIC Evaluation Recommendation 4.c: The IOUs develop more detailed processes to quantify benefits associated with their projects, including what types of data would be necessary and how they will collect these data, as well as a reporting structure and process that would document and report those benefits to all relevant stakeholders.*]

iii. The CEC has no recommendation on the IOUs developing more detailed processes to quantify benefits associated with their projects, including what types of data would be necessary and how they will collect these data, as well as a reporting structure and process that would document and report those benefits to all relevant stakeholders.

The CEC has no recommendation for this item.

> [*EPIC Evaluation Recommendation 4.d: The administrators develop a process to jointly report on EPIC's short-, mid- and long-term project benefits across the portfolio on a routine basis (e.g., annually) to the CPUC, relevant stakeholders and the general public.*]

iv. The CEC is already reporting short-, mid-, and long-term project benefits on an annual basis.

The EPIC Evaluation states that "The CEC's process [for benefits tracking] appears to be well thought out and thorough and addresses the CPUC's requirements to measure and report on project benefits." Additionally, the CEC is in the process of upgrading the Energy Innovation Showcase which currently shows information about all EPIC funded projects including the expected benefits identified at the outset of the project. The upgraded website will feature integration with the topical forums and EPIC Symposium allowing for easier connection between EPIC funded projects and the events where they are featured.

Subsequent reporting on benefits is also included in the EPIC Annual Report and the Annual report highlights, and project final reports include a complete description of ratepayer benefits resulting from the research.

[*EPIC Evaluation Recommendation 4.e: The CEC's project benefits quantification processes be reviewed again once more projects are completed.*]

v. The CEC has quantified CEC EPIC program and project benefits.

The CEC believes that additional review of its project quantification process is an appropriate topic for a future program evaluation. The EPIC Evaluation states that "The CEC has a structured and transparent process in place for tracking project benefits." The CEC believes its benefits quantification process is well aligned with peer R&D programs and continues to refine the process. In May 2018, the CEC brought on consulting firm Industrial Economics, Inc. (IEc) to develop new methodologies and tools to enhance benefits analysis for the EPIC program. While the effort is still underway, IEc has developed new tools to analyze benefits such as on-bill energy savings from load reduction technologies, improvements to grid reliability, air quality health improvements, and public safety benefits through improved reliability of critical facilities. In addition to developing tools, IEc is also assisting the CEC with developing improved methods of data collection from grant recipients, and databases to store and report on analyses. These tools will allow more detailed analysis of benefits at both a project and portfolio level.

These new tools complement ongoing efforts within the CEC to improve benefit analysis. For example, projects are now required to identify specific performance metrics at the start of a project to identify what success looks like for a given project. This allows for better tracking of a project's progress throughout its term.

The CEC will continue its method of tracking benefits and, as the portfolio of projects becomes more mature, be able to report on an increasing number of project benefits.

[*EPIC Evaluation Recommendation 4.f: SCE share its project results more widely with interested stakeholders, including delivering presentations at conferences and workshops.*]

vi. The CEC has no recommendation on SCE sharing its project results more widely with interested stakeholders, including delivering presentations at conferences and workshops.

The CEC has no recommendation for this item.

[*EPIC Evaluation Recommendation 4.g: SDG&E's project closeout reports be reviewed once projects are completed to ensure results are being widely disseminated.*]

vii. The CEC has no recommendation on SDG&E's project closeout reports being reviewed once projects are completed to ensure results are being widely disseminated.

The CEC has no recommendation for this item.

[*EPIC Evaluation Recommendation 4.h: The administrators jointly develop a single EPIC website and listserv to post and distribute project information.*]

viii. The PICG Coordinator should leverage and augment the CEC's existing platforms to develop a single EPIC website and listserv to post and distribute project information.

The EPIC Evaluation recommended developing a single website and listserv to post and distribute project information. The Commission has assigned this task to the PICG Coordinator in collaboration with the Administrators. The majority of this information is already available to the public through the CEC's Energy Innovation Showcase, and the CEC has recommended to the Commission to utilize this information as a substantive basis for the combined system. Because the CEC has 80% of EPIC funding, the work already funded by the EPIC program to develop the Energy Innovation Showcase should be substantially leveraged to minimize the cost to develop the joint website.

i. Project Impacts and Policy Alignment

[*EPIC Evaluation Recommendation 5.a: The CPUC consider using our characterization of the EPIC portfolio in terms of the types of technologies and studies and their commercialization status as baselines against which to compare future iterations of EPIC.*]

i. The CEC recommends that the Administrators work together to develop an updated description of the portfolio.

Evergreen Economics created a characterization of technology types for the purposes of the evaluation. The characterization created eleven technology types (e.g., microgrid and V2G, water energy nexus, biomass and biogas) and aligned research projects to these eleven technology types for the purposes of describing the combined CEC and IOU portfolios. For example, Evergreen Economics identified 29 projects that would be categorized as Microgrid and V2G technology types. The CEC believes that these technology types do not appropriately characterize the suite of technology areas that are the subject of research by the Administrators. For example, the characterization created very broad categories such as "Microgrid and V2G," which combines two topics with different technology issues, and which have different technology solutions. The characterization also includes specific technologies, such as concentrated solar power, as a category. The CEC believes that the Administrators can better develop a characterization of the baseline portfolio and commercialization status to be used in evaluating future iterations of EPIC research. The CEC recommends that the Commission direct the Administrators to jointly develop an updated and simplified description of the portfolio.

> [*EPIC Evaluation Recommendation 5.b: The CPUC regularly evaluate EPIC to confirm that the CEC is ensuring the Market Facilitation projects are effectively connected to and serving the needs of the Applied R&D and TD&D projects.*]

ii. The CEC recommends including a review of market facilitation projects in the next program evaluation.

The CEC supports the Commission evaluating Market Facilitation projects in the next review period to ensure they are effectively connected and serving the needs of the Applied R&D and TD&D projects. The CEC believes its Market Facilitation portfolio and approach is building a connection to the needs of Applied R&D and TD&D projects. At the time the EPIC Evaluation was conducted, the portfolio of Market Facilitation projects was early in its lifecycle. Since then, the Market Facilitation program area has implemented several new programs to better link different technology development stages. For example, in November 2017, the CEC issued the first of its Bringing Rapid Innovation Development to Green Energy (BRIDGE) solicitations. The BRIDGE program provides EPIC funding to promising clean energy technologies that have previously received an award from an eligible CEC program or United States federal agency, such as the Department of Energy. The BRIDGE program provides critical follow-on funding that allows researchers to continue their technology development in either applied research or demonstration and deployment, without losing momentum or pausing to fundraise from private sources.

Another example is the Realizing Accelerated Manufacturing Production (RAMP) program, first released in 2018. RAMP helps companies scale their clean energy technologies from one-off, hand-built prototypes into an initial pilot production line capable of low-rate initial production. RAMP helps companies with relatively mature clean energy innovations begin to scale production of their technology to meet increased customer demand and increase deployment.

These two programs are examples of how the Market Facilitation program area has grown over the past several years to better support clean energy innovation across different development stages.

As noted in the response in section 4.c, the CEC does not consider Market Facilitation to be strictly the third stage of the energy innovation pipeline, but rather to be strategic support at key stages of a new technology's development to increase the likelihood of market adoption and commercial success. This ancillary support has included activities to: 1) fill gaps within the state's innovation ecosystem needed to support successful clean energy entrepreneurship; and 2) increase the institutional capacity of local jurisdictions, industry, and businesses to adopt and deploy new clean energy technology solutions into their facilities, communities, practices, and operations.

> [*EPIC Evaluation Recommendation 5.c: EPIC administrators establish a process to ensure that once Applied R&D projects are completed by the CEC, the results are considered and potential TD&D projects are identified.*]

iii. The CEC and IOUs are reviewing CEC Applied R&D projects for potential TD&D by the IOUs.

The evaluation recommended that the Administrators develop a process to review the results of CEC applied R&D projects to see if any new technologies are appropriate for an IOU-funded TD&D project. The IOUs and CEC meet on a biweekly basis to coordinate EPIC activities. In those meetings, the CEC shares information about new research that may be of interest to the IOUs so that the IOUs can be engaged during the projects, if they are interested. Additionally, the Administrators tee up technology specific sessions to share information. For example, the CEC has had separate information sharing sessions on research results in distribution modeling, VGI, and energy storage. These types of meetings inform the IOUs of demonstrations and deployments. For example, information on CEC non-lithium ion energy storage development projects informed SCE in shaping their future demonstration of non-lithium ion energy storage. Also, results from CEC-funded distribution modeling has resulted in interest from several of the IOUs in further evaluating the technology for deployment through a third-party vendor.

The IOUs also routinely participate as TAC members on CEC projects, where they provide independent input on project approach and results along with other industry representatives. TAC participation also enables the IOU Administrators to learn directly from the researchers and makes connections between the recipients and the IOUs for further engagement during and after the project. The CEC respectfully requests that the IOUs include CEC on their EPIC project TACs to further enhance information sharing.

j. On-Going Program Evaluation

[*EPIC Evaluation Recommendation 7.a: Using the theory-driven framework developed for this evaluation, monitor and report key performance metrics on an on-going basis and conduct a comprehensive evaluation every three to four years. All of these evaluation activities should be conducted by an independent evaluator in close collaboration with the four administrators to avoid any duplication of efforts and to ensure that the results will be useful to all stakeholders (e.g., the CPUC, state legislators, and the four administrators and other stakeholders).*]

i. The CEC reports key performance metrics on an annual basis and supports periodic evaluations.

The CEC agrees with the recommendation of the EPIC Evaluation regarding reporting of key performance metrics and periodic evaluations. The CEC reports key program and project metrics in the CEC's EPIC annual report and also includes this information on the Energy Innovation Showcase website. Providing the key performance metrics demonstrates the ongoing benefits of the program.

As noted in the CEC Phase 1 Opening Brief, the CEC believes that periodic evaluations are valuable for continual improvement of the program. Also, as noted in the CEC Phase 1 Reply Brief, the CEC believes the next evaluation should be conducted in two to three years from the beginning of EPIC 4 to allow the evaluator to assess the impacts of changes currently being implemented from the last evaluation, including the value of the PICG efforts, which are just beginning.

[*EPIC Evaluation Recommendation 7.b: The administrators create a single, centralized database containing all relevant information on active and completed EPIC projects along with monitoring and quarterly reporting of key performance metrics, in order to support the on-going evaluation of the Program.*]

ii. The PICG Coordinator Should Build on the Existing CEC Database to Develop A Centralized Database of Projects to Support Information Sharing and Periodic Evaluations.

The PICG coordinator is in the process of working with the Administrators to develop a comprehensive database of projects. The CEC recommends that the PICG Coordinator continue to draw heavily from the system developed by the CEC in the Energy Innovation Showcase to reduce duplication of efforts and to take advantage of the robust dataset in that platform, which also includes CEC program and project metrics. As noted in the response in section 5.h.viii above, the majority of the project information is already available to the public through the CEC's Energy Innovation Showcase. The PICG Coordinator should utilize this information as a substantive basis for the centralized database. The CEC has 80% of EPIC funding, so the work already funded by the EPIC program to develop the Energy Innovation Showcase should be substantially leveraged to minimize program cost to develop the centralized database.

> [*EPIC Evaluation Recommendation 7.c: Modify (and continually update as needed) the characterization of the Program to more accurately reflect its complexity and 7.d: Modify (and continually update as needed) the EPIC program theory and logic models to better reflect the more complex character of the Program.*]

iii. The CEC does not believe there is value in updating the EPIC Evaluation report program characterization or logic models.

Evergreen Economics developed two products to help in its evaluation: a portfolio characterization and a set of logic models to describe EPIC processes. The portfolio characterization broke down the research funding by Administrator, research type (e.g., applied research, demonstrations, market facilitation) and by broad topics (e.g., grid operations, generation, transmission). This allowed Evergreen Economics to understand how the research was being funded.

The logic models that were developed are complex flow diagrams that describe the relationship among such program elements as:

- Inputs (e.g., EPIC funds, data from past R&D activities),
- Activities (e.g., solicitation development, recipient research activities),
- Outputs (e.g., annual reports, project reports), and
- Outcomes (e.g., increased knowledge, venture capital investment in products).

These models were useful for Evergreen to understand the total program, including every process and every step in each process.

While these tools were helpful for Evergreen Economics to guide its evaluation, they have not been useful for the CEC either to perform the Administrator role or to communicate the program externally. Because of their detail (particularly the logic models), these tools do not lend themselves to communicating the program or to engaging stakeholders. The EPIC program has evolved substantially since the EPIC Evaluation with many new approaches taken to describe the program and relevant processes, developed specifically for external stakeholders. The PICG is developing the EPIC program-wide database, which will consolidate Administrator program data into one location for interested stakeholders.

The CEC has found that stakeholders are interested in specific technical challenges, funding opportunities, and results. For this reason, the CEC developed the Energy Innovation Showcase and the Empower Innovation platform to share the information of greatest interest by stakeholders. The CEC developed additional outreach materials, such as fact sheets and videos, to help potential applicants understand the solicitation process, and hosting them on a dedicated page on the CEC website.

Therefore, the CEC does not believe there is value in updating the Evergreen Economics tools. However, if the Commission determines that there are any remaining gaps to characterizing the research or relevant processes, the Commission should direct the Administrators in the Phase 2 decision to work together to address any gaps.

[*EPIC Evaluation Recommendation 7.e: Revisit the key performance metrics that should be tracked and the frequency with which they should be tracked and reported.*]

iv. The CEC recommends re-evaluating key performance metrics during each renewal.

The CEC has evolved its performance metrics over time and regularly reports on the program and project metrics in each investment plan and the results of assessing the metrics in each annual report. The CEC believes that its current set of metrics is comprehensive and based on best practices for energy R&D programs. The CEC recommends limiting future changes to the performance metrics for multiple reasons. First, as metrics change, it becomes more challenging to evaluate program performance over time. Second, changes to metrics require changes to data gathered, which can have a cost impact on recipients, depending on the type and frequency of data gathered. To improve program performance evaluation over time and reduce impacts to projects, the CEC recommends that the best time to review performance metrics is at each program renewal, so that appropriate data collection can be put in place to support evaluation of the metrics.

6. <u>Future Program and Administrator Evaluations.</u>

[*Phase 1 Decision Question 6.a: What metrics should be used in evaluating the program's success going forward?*]

a. The CEC Provided a Robust Set of Metrics to Measure the Program in the CEC Phase 1 Opening Brief.

As discussed in the CEC Phase 1 Opening Brief, the CEC believes that metrics for program success can be categorized into the areas of: 1) Technology Advancement and Commercialization; 2) Technology Diffusion; 3) Knowledge Generation and Dissemination; and 4) Diversity and Equity. The Commission and EPIC Evaluation have both recognized the value of the CEC's metrics. As summarized by the PAO in its opening comments, "The Commission concluded that the CEC is satisfying its obligation to quantify ratepayer benefits. The Commission stated that 'Evergreen found that the CEC has an effective, structured and transparent process in place for tracking benefits[.]' Furthermore, the Evergreen Evaluation stated that '[t]he CEC process appears to be well thought out and thorough, and addresses the CPUC's requirements to measure and report on project benefits."[61]

These metrics demonstrate the ability of EPIC funding to support the development of new technologies, including commercialization; enabling technologies to move into the market (e.g., through supporting codes and standards); sharing the research findings broadly; and working to ensure that the solutions support ratepayers in vulnerable communities.

These categories of metrics are consistent with the metrics identified by the Commission in D.12-05-037 and elaborated in D.13-11-025. In those decisions the Commission identified several categories of metrics with associated areas of measurement. The CEC believes the categories of metrics mentioned above encompasses those original metric categories and offer a framework to evaluate the program as a whole, as opposed to the success of individually funded projects. Table 3 below shows how the CEC recommended metric categories correspond with the Commission metrics identified in previous decisions.

[61] Opening Brief of the Public Advocates Office on the Electric Program Investment Charge Phase 1, April 17, 2020.

Table 3: Comparison of CEC Recommended Metrics with Previous Commission Identified Metrics

CEC Recommended Metrics	Metrics Identified in D.12-05-037 and D.13-11-025
Technology Advancement and Commercialization	• Potential energy and cost savings • Promotes greater reliability • Job creation • Economic benefits • Environmental benefits
Technology Diffusion	• Potential energy and cost savings • Promotes greater reliability • Job creation • Economic benefits • Environmental benefits • Identification of barriers or issues resolved that prevented widespread deployment of technology or strategy. • Adoption of technology, strategy, and research data by others.
Knowledge Generation and Dissemination	• Effectiveness of information dissemination. • Adoption of technology, strategy, and research data by others.
Diversity and Equity	• Potential energy and cost savings • Promotes greater reliability • Job creation • Economic benefits • Environmental benefits

Since the scope of EPIC is so broad, metrics of success of individual projects can vary greatly depending on factors such as the type of research, technology type, and technology maturity. However, the CEC believes the categories of metrics mentioned above capture the broad scope of the EPIC portfolio and serve as indicators of program success.

[*Phase 1 Decision Question 6.b: What other items should an evaluation consider?*]

b. Future Evaluations Should Continue to Compare the EPIC Program Processes to Best Practices in Other Similar Energy R&D Programs and Assess Technology Scaling.

An essential part of any programmatic evaluation is to benchmark the program against programs that have similar objectives, technology challenges, and market conditions. As such, the

EPIC evaluation compared EPIC program processes and benefits to the best practices of similar clean energy R&D programs, but primarily three Department of Energy programs: ARPA-E, Small Business Innovation Research Program, and Small Business Technology Transfer Program, and the NYSERDA's Technology and Market Development Program.[62] The CEC believes that these programs continue to provide appropriate benchmarks for the EPIC program because the objectives, challenges, and markets of these programs are similar to the EPIC program.

One challenge with the last evaluation was that there were few completed projects funded by EPIC and insufficient time for technologies to be able to scale. The evaluation metrics used in a nascent program are different than in a more mature program. With more projects completed and more time for technologies to scale, the next evaluation will be better timed to assess the extent of technology scaling to end customers and the grid. The CEC recommends that future evaluations assess the extent of technology scaling.

[*Phase 1 Decision Question 6.c: When should the evaluations take place?*]

c. The Next Program Evaluation Should be in Three or Four Years, but Administrator Evaluations Can be Conducted Earlier.

The Commission has performed different evaluations of the EPIC program. The Commission engaged Evergreen Economics to conduct a program review to evaluate Administrator approaches to meeting the program objectives. The Commission has also conducted Administrator-specific evaluations, which assess performance of administrative and financial functions and are generally of a smaller scope. The Commission is also reviewing key elements of the program in this renewal proceeding and can make additional adjustments to the program.

Program Evaluations

The CEC believes that future program and Administrator evaluations can be conducted together or separately, but the next program evaluation should allow time for the program adjustments from this proceeding to be put into practice. Therefore, the CEC believes that a program review be conducted no earlier than 2024. As noted in its opening comments to this proceeding, the CEC supports periodic independent program evaluations as part of program transparency and continual improvement. Independent program evaluations can supplement ongoing program evaluations conducted through existing processes, such as for the investment

[62] Program descriptions available in Appendix A of the EPIC Evaluation Report, p. 14-10 through 14-14.

planning process and annual reporting, which solicit public feedback on the direction and administration of the program. Additionally, the Commission and EPIC Administrators are currently implementing administrative changes associated with the previous program evaluation.

The CEC recognizes the value of independent evaluations to provide a different perspective; however, the CEC notes that several recommendations from the EPIC Evaluation (e.g., implementing the PICG) are just now being implemented. The benefits of these improvements will take some time to realize. The CEC recommends that the Commission allow time for full implementation of the recommendations from the last program evaluation and changes from this proceeding, so there is sufficient time to evaluate the impact of the changes on the program, prior to initiating the next program evaluation. The CEC believes that the Commission should allow at least three years before the next independent program evaluation.

Administrator Evaluations

The CEC believes that these can be conducted on an as-needed basis, as determined by the Commission. If the Commission decides to retain the Administrator role for the IOUs, it may be valuable to an Administrator Evaluation prior to the next program evaluation.

[*Phase 1 Decision Question 6.d: Who should conduct the evaluation?*]

d. The Next Evaluation Should be Performed by an External Party that is Selected Through a Competitive Solicitation.

The CEC supports having an independent entity conduct the next evaluation. The CEC believes that an external evaluator should perform the next evaluation. This evaluator should have deep knowledge of, and experience with clean energy R&D programs.

[*Phase 1 Decision Question 6.e: Should different metrics apply to different administrators?*]

e. The EPIC Program Should Use the CEC's Set of Metrics, but a Subset may be More Appropriate for the IOU Administrators.

As previously noted in section 6.a. above, the Commission and the EPIC Evaluation found the CEC metrics comprehensive and measures the overall program impact as well as the benefits achieved from different types of research, including applied R&D, TD&D, and Market Facilitation. However, recognizing that the IOU Administrators do not fund applied R&D or

Market Facilitation research, some metrics may not apply. The Commission may choose to establish a subset of the CEC's metrics for use by the IOU Administrators.

[*Phase 1 Decision Question 6.f: What are the consequences for underperformance?*]

f. Underperformance Should be Addressed First Through a Corrective Action Plan and a Period of Re-evaluation.

If an Administrator is determined to have underperformed, the CEC recommends that the Commission identify the Administrator's performance issues, require the Administrator to develop a corrective action plan, and then monitor performance to the plan. The Administrator would be on probation during this period until the Commission determines that the performance has improved or that the participation by the Administrator should be terminated.

7. Interim Investment Plan.

The CEC intends to prepare an interim investment plan before January 2021 to cover the period between the beginning of EPIC 4 on January 1, 2021 and final approval of the CEC's full EPIC 4 investment plan. The CEC will file the interim investment plan as part of a motion in the current proceeding and will separately file its full EPIC 4 investment plan by October 1, 2021, in accordance with the Phase 1 Decision.

8. Phase 2 Workshops.

The Scoping Memo schedule included a placeholder for Phase 2 workshops. The CEC recommends holding one workshop in Phase 2 to focus on the guiding principles and policy priorities to solicit broader input on these two topics and ensure that any updates are identified before EPIC 4 planning begins. The CEC believes that the remaining items can be addressed through opening and reply briefs. Holding multiple workshops, particularly recognizing that they would need to be virtual, could delay Phase 2 of the proceeding without adding substantive value.

III. CONCLUSION

The CEC appreciates the opportunity to continue to improve the EPIC program, where the changes can result in a more efficient and effective change and support the Governor's interest in achieving key clean energy policy goals early. For the reason discussed above, the CEC strongly recommends continuing to use the primary guiding principles for the program and updating the complementary guiding principles. The CEC believes that a robust process is in place for setting policy priorities and recommends that these priorities be re-evaluated at the beginning of each investment cycle. The CEC does not believe any changes are required to the administrative structure but supports an evaluation of all program administrative requirements to identify opportunities to streamline these requirements. The CEC also requests an increase in its administrative budget to strengthen the program, particularly in outreach to low-income and disadvantaged communities and to better support moving technologies to market, but also to better address the administrative duties and costs required to successfully administer an R&D program. Many enhancements have been made to the EPIC program to share research results broadly, including to support the Commission's proceedings, since the EPIC Evaluation by Evergreen Economics. These enhancements, which also include the development of the PICG, address many of the EPIC Evaluation recommendations, and no additional enhancements are needed, apart from continuing to increase outreach to low-income and disadvantaged communities.

The CEC has established a robust set of program metrics, as recognized by the Commission, and has demonstrated that CEC-funded research has created substantial ratepayer benefits as measured by these metrics on at least an annual basis. The CEC supports ongoing program evaluations and believes that the next evaluation would be most productive if conducted no earlier than 2024.

The CEC appreciates the opportunity to provide input on the continuation and on-going improvement of the EPIC program. It looks forward to continuing its work with the Commission to implement the renewed EPIC program and building on the program's ability to shape California's clean energy market and enable the state to more effectively and efficiently meet its energy mandates.

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Dated this 2nd day of October 2020.

Respectfully submitted,

CALIFORNIA ENERGY COMMISSION

/S/

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